

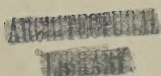


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THE ARCHITECTS' & BUILDERS' JOURNAL.

*A Weekly Journal for Architects Surveyors
Builders and Constructional Engineers.*

It is our aim, our ambition, our aspiration even, to build our Journal worthily and well, not for the hour only, but for future years; for the few men in the forefront of an enduring and a laborious art; for the disciplined ranks of a distinguished profession; for the young men—Architects to be—and for all who love a clustered column or a flying buttress, a traceried window or a Greek frieze; for the man, too, who honestly plumbs a jamb.

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THE ARCHITECTS' & BUILDERS' JOURNAL.

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BOARD-ROOM, KODAK BUILDING, KINGSWAY, LONDON.
JOHN J. BURNET, A.R.S.A., F.R.I.B.A., AND SON, ARCHITECTS.



"BROAD DENE," HASLEMERE: DETAIL OF GARDEN FRONT.
W. F. UNSWORTH, F.R.I.B.A. (UNSWORTH, SON, AND TRIGGS), ARCHITECT.
(See pages 23 and 24.)


THE ARCHITECTS' & BUILDERS' JOURNAL.

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VOLUME 36. No. 911.

Architects' Interests Under the New Copyright Act.

S is usually the case, the production of a new Act in regard to copyright has brought out various analyses and explanations of the Act from legal commentators. Two such are before us,* one by Mr. E. J. MacGillivray, barrister-at-law (who is, if we remember right, the legal adviser of the Institute of Architects), and the other by Mr. H. Hurrell, another barrister. To the latter book is appended a treatise on French Copyright Law, by M. Maurice Théry. Whether this was originally written in English or is a translation is not stated. As nothing is said of a translator, however, we may presume it is an English essay, especially as the author adds "barrister-at-law" to his French professional title.

Mr. MacGillivray's is the better arranged and more generally useful book. By employing three different sizes of type he enables the reader clearly to distinguish at a glance between the three subjects of his book. Each clause of the new Act is given in turn, in the largest type; then follow comments upon it, explaining its effect (smaller type); then follow statements of the previously existing law (smallest type) so that the reader may compare the previous state of things with that brought about by the new Act which came into force on July 1. Nothing could be more clear and logical in arrangement.

The point for our interest is, of course, that, after much opposition in Parliament and elsewhere, architectural design is for the first time, in England, made the subject of copyright protection—a procedure which, because it is new in this country, is regarded by most persons as an anomaly, and has evidently much exercised the minds of the lawyers. There are, however, one or two other points in connection with artistic copyright which may call for remark.

Clause 2 of the Act defines infringement of copyright as the doing of anything without the consent of the owner of the copyright, "the sole right to do which is by this Act conferred on the owner of the copyright." Exceptions are then made in sub-clauses. The first one only relates to literary matter. The second exception is very important to architects, painters, and sculptors, and, for one reason, most especially so to architects. It states as an exception:—

Where the author of an artistic work is not the owner of the copyright therein, the use by the author of any mould, cast, sketch, plan, model, or study made by him for the purpose of the work, provided that he does not thereby repeat or imitate the main design of the work.

The importance of this to architects is that it takes obviously for granted that drawings and models made by him for the purpose of carrying out the work are his pro-

perty, not the property of the owner of the copyright. It seems to us impossible that it can be read any other way, and it only shows how unacquainted lawyers are with some of the peculiar troubles of architects, that throughout the whole book not the slightest reference is made to this question of the ownership of architects' drawings, which has been so often before law courts with such unsatisfactory results to architects. But it appears that there can be no doubt whatever that the clause amounts to an assumption that the drawings are the property of the architect from henceforth, as he is given distinct permission to use them further, provided that he does not use them to repeat or imitate the main design of the work of which the owner has the copyright. Unless they are his property there can be no sense in limiting his use of them. Whether lawyers and judges, with their apparently traditional predisposition against the claims of architects, will find a way out of this conclusion, we should not like to undertake to say, but on the grounds of the ordinary logic of words we should say that the clause settles the question in favour of the architect.

But we fear that in respect of the protection of his design from repetition this Act will not confer upon architects the powers which some of them appear to have expected from it. Clause 5 states that the author of any work shall be the "first owner" of the copyright in it, but it immediately goes on to say that "when in the case of an engraving, photograph, or portrait, the plate or other original was ordered by some other person, and was made for valuable consideration in pursuance of that order, then, in the absence of any agreement to the contrary, the person by whom such plate or other original was ordered shall be the first owner of the copyright." Nothing is said about architectural design in express terms, which seems an unaccountable oversight in an Act which gives copyright in it for the first time (in this country), but it seems obvious that in this case an architectural design must follow the same rule. Unless the architect enters into an agreement with the building owner to reserve the copyright to himself, the copyright passes automatically to the building owner who has commissioned the work "for a valuable consideration," and in the notes to this section the author observes that "copyright passes immediately the work is executed in pursuance of the commission, and consequently payment of the artist, in the case of a money consideration, is not a condition precedent to the vesting of the copyright in the employer." True, the architect can, if he likes to try it, enter into an agreement with the employer that the copyright is to remain with the architect, but he will not be very likely to be successful in inducing the employer to agree to this. Even if he does, he cannot prevent the construction of a building pirating his design if it has been already commenced; that is, he cannot compel the infringing owner to pull his work down, nor can he impose summary penalties. The one thing apparently that the owner of the copyright (whether building owner or architect) can do is to bring an action for estimated damages to his interests, which it may be difficult to appraise in any sense that a court of law would recognise. The one real advantage that the architect gets by the Act is that by implication (as we read it) he retains the ownership of his

* The Copyright Act, 1911, Annotated; with Appendix containing the revised Convention of Berne. By E. J. MacGillivray, Barrister-at-law. London: Stevens and Sons, 1912, price 5s.

Copyright Law and the Copyright Act, 1911. By Henry Hurrell, Barrister-at-law, with a treatise on French Copyright Law by Maurice Théry, Avocat de la Cour d'Appel de Paris, Barrister-at-law. London: Waterlow and Sons. Price 3s. 6d.

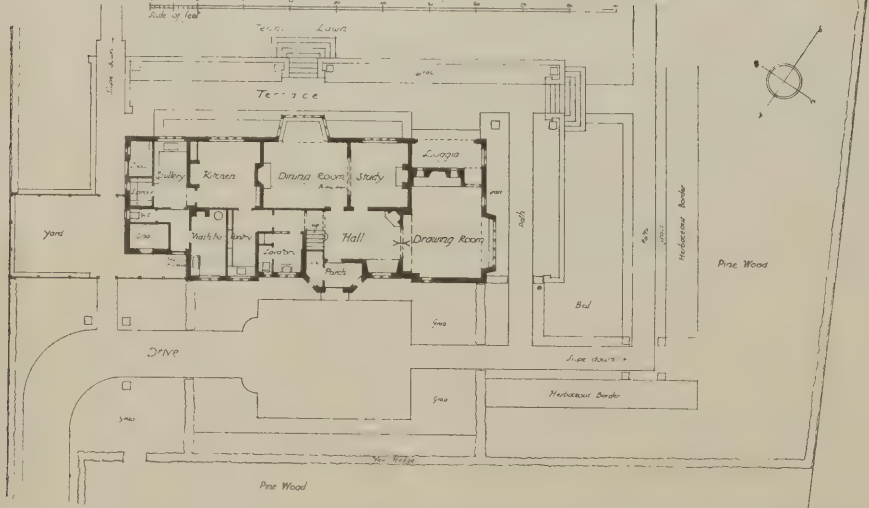
own drawings, and therefore deprives the building owner of the power to use them over again for another building. That is a distinct gain, but we fear it is the only one that the architect will obtain by the Act, unless he either persuades the client to leave him the copyright, or unless he is building at his own expense and for his own pleasure. If he builds a house for himself he can restrain any one else from copying it. But as soon as he builds as a commission from a client the copyright in the design passes over to the client, unless the architect has been able to persuade him into an agreement to the contrary.

This does not amount to very great satisfaction, but in this respect the architect is in the same position as the painter or sculptor who has been commissioned to produce a work. As soon as it is a commission the copyright passes over to the person who commissions the work

and is prepared to pay for it. The sculptor and painter are, however, in a better position in this way, that they may and often do produce works not on commission, but merely (apart from the interest of producing them) for the chance of selling them afterwards. Until they are sold the copyright is absolutely the artist's, and when they are sold it is easy to say, "I do not sell you the copyright." A French law passed in 1910, according to M. Théry, laid it down that "the sale of a work of art does not include, unless otherwise agreed, the sale of the copyright," so that here the law creates a presumption in favour of the artist, which does not appear to exist in the English Act. But buildings, from the nature of the case, are seldom erected except on commission, and then it is by no means so simple a matter to attempt to reserve the copyright.



HOUSE AT PRENTON CHESHIRE FOR ARNOLD THORNEY, ESQ.



FIRST FLOOR PLAN

Arnold Thorney F.R.S.A.
Architect, Royal Law Building
Liverpool

This house, the architect's own home, is situated in a pine wood on the crest of a low hill at Prenton, Cheshire. The house stands well back from the road. On the entrance front the chief feature is the porch, which is built of cream-coloured local stone from the Storeton quarries. The remainder of the house is faced with 2-in. rustic bricks, wire-cut on face, from Sutton Oak, St. Helens. The roof is covered with Yorkshire stone slates of variegated tints. The internal arrangement is shown by the accompanying plans.

Whether either architect or building-owner took proceedings against infringement of copyright, however, they might find themselves in a considerable difficulty in establishing their case in a court of law. For a building is not protected against imitation unless it has artistic character. According to Clause 35, "'Architectural Work of Art' means any building or structure having an artistic character or design, in respect of such character or design, or any model for such building or structure, provided that the protection afforded by this Act shall be confined to the artistic character and design, and shall not extend to processes or methods of construction." That leaves a nice nut for judges, juries, and counsel to crack. Where do "artistic character and design" begin and where do they end? And who is to draw the line, and how? One can hardly imagine a case of the kind coming up in which there would not be, in the stock phrase, "Much to be said on both sides." The French seem to have had a similar difficulty in regard to "such sculpture as is used for the ornamentation of manufactured objects, such as clocks, candelabras, etc." These were formerly classed not as works of art, but as "industrial designs," and came under another law, which required a specimen of the design to be deposited in order to claim protection for it; and sculptors and designers who considered these designs as works of fine art, and deposited no specimens, were much aggrieved. Their grievances were rectified, M. Théry tells us, by a law passed in 1902, which declared all the works of ornament designers to be works of art, "whatever may be the merit of the work and the purpose for which it was designed," so that such designs are now protected as works of art, which seems only right. The general tendency of the French law seems to be rather more in favour of copyright to the author of the work than the English Act.

Among the exceptions (before referred to) to Clause 2, which defines copyright, it is stated that copyright is not infringed by "the making of paintings, drawings, engravings, or photographs, of a work of sculpture or artistic craftsmanship, if permanently situated in any public place or building, or the making or publishing of paintings, drawings, engravings, or photographs (which are not in the nature of architectural drawings or plans) of any architectural work of art." That is to say, you may make a picture of a building in a public place, without asking any one's permission, but you may not make measured drawings of it, which seems a reasonable distinction. Mr. MacGillivray observes that the Act nowhere gives any definition of a "public place," but it does not seem difficult to understand. A public place means any place to which the public have free right of access. As he says, a theatre or other such building, to which the public only have access on payment or by permission of some one, is not a public place in the meaning of the Act.

Architects' drawings, as drawings, have of course the same protection from unlicensed copying as any other drawings. But as far as their buildings are concerned they have no legal protection against their designs being reproduced except on the condition (1) of persuading the client to an agreement to leave them the copyright, and (2) of proving that the buildings are works of art. Beyond that the chief benefit to architects in the Act lies in the fact that it appears to give them, by implication, the property in their own studies and working drawings for a building, and that at least is an important point gained.

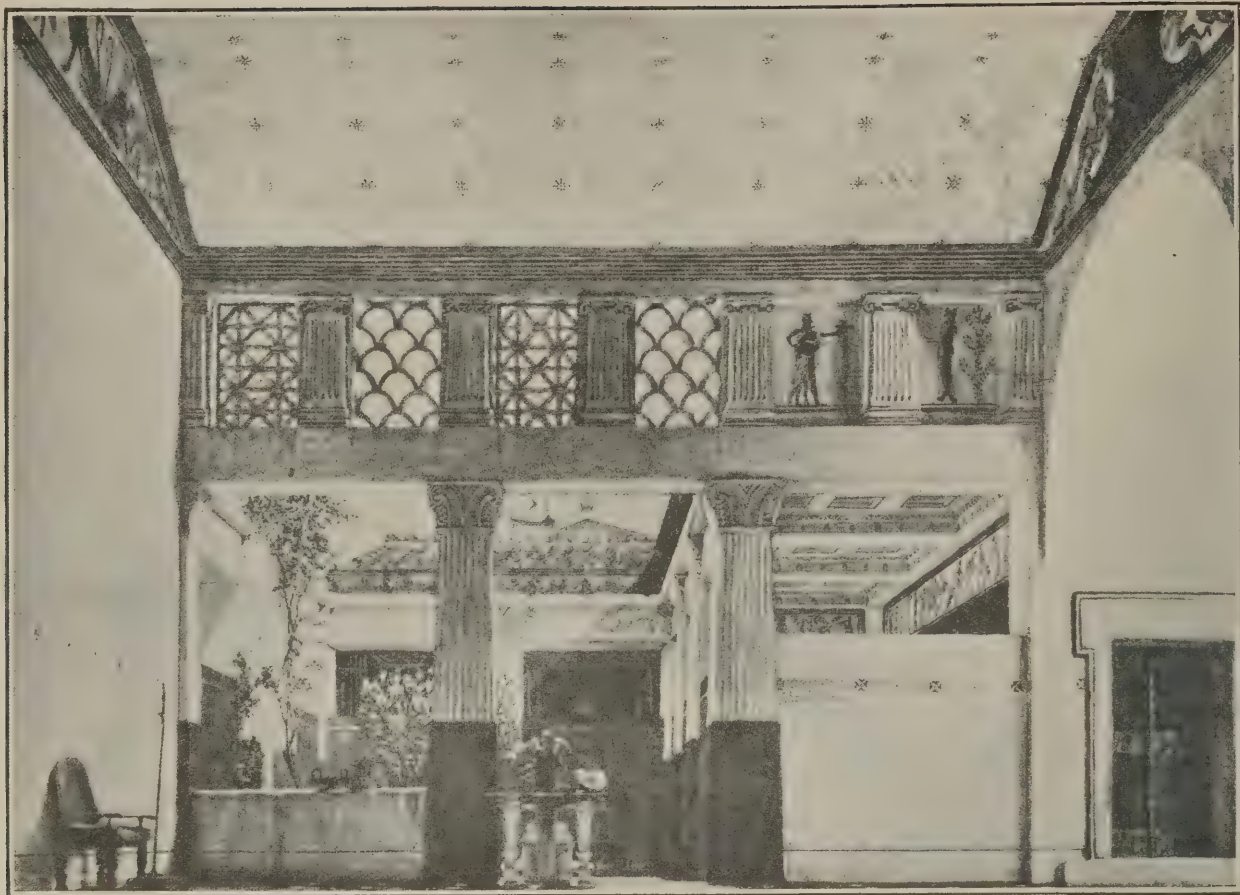
The London Society.

AT a meeting of the London Society last week, at the Society of Arts, Professor Beresford Pite in the chair, Colonel Hellard opened what was supposed to be discussion on Mr. Raffles Davison's paper at the last meeting, by a short lecture on the principles which had governed the Traffic Commission in their recommendations as to new roads for the London district, illustrated by lantern slides of diagrams showing graphically the conditions and proportions of London traffic on different roads and bridges. This would have



SEAT AND SUNDIAL, "MARSH HOUSE," BENTLEY, HANTS.
ERNEST EMEFSON, A.R.I.B.A., ARCHITECT.

been very interesting but for the fact that we have heard or read it all before, and seen all the diagrams before, and it had not much to do with Mr. Davison's paper. But we quite agree with Colonel Hellard's clinching argument on the subject, viz., that the longer the making of these new roads is deferred the more difficult and costly it will be to make them. In the course of the discussion which followed, in which Mr. Paul Waterhouse, Mr. Arthur Crowe, and others took part, two points suggested were worth special notice. One was that where there is (as there generally is) a constricted width of road between the houses of a village, it is much better to provide a by-pass road than to destroy, as it were, the face of the village by pulling down the houses and setting them back. The other remark was in regard to the evil effects of the present building line regulations of the County Council, which allowed an existing low and insignificant building to define the street line and to be rebuilt to any height on the same line. Some striking photographs of the result of this were shown. This mischievous result arises, it was said, from the fact that the duty of the architect to the Council is only to define what is the line of street. He should rather define what ought to be the line in future.



INTERIOR OF THE HOUSE OF CORIOLANUS: FROM THE ORIGINAL WATER-COLOUR
BY THE LATE SIR LAWRENCE ALMA-TADEMA, R.A.

SIR L. ALMA-TADEMA.

THE death at Wiesbaden of Sir Lawrence Alma-Tadema removes from among us one more of those whom we may call the great Royal Academicians of the closing generation; one of the few whose pictures were important factors in the success of every annual exhibition. There were limitations in his work, no doubt, but it was work you could never pass over. Laurens Alma Tadema was his original name, and when he first came to live in London and was known only by his last two names many people supposed that he was an Italian, and pronounced his name with the *e* long: he explained on one such occasion, "I am Tadema, and I come from the country of Hobbema." Latterly he Anglicised his first name into "Lawrence" and hyphenated the two other names into a surname. But he was a Dutchman by birth, and had all the traditional Dutch love of highly finished detail and exactitude in painting, together with something more than most Dutch artists have possessed. He made a fortunate choice when, after tentative experiments in various directions, he settled down into taking the reproduction of ancient Greek and Roman life as his principal object in painting; for this included the representation of Greek and Roman architecture and decorative detail, and no modern painter has ever handled these as he has done. Not only were his power and industry so great in the realistic representation of beautiful materials—no one has ever painted marble as he has done—but he had acquired a most accurate knowledge of Greek and Roman architectural detail, together with a complete command of architectural perspective. Through a narrow interval between two foreground objects he would show you the complete architecture of a great temple in the middle distance, sparkling in the strong sunlight, and all its perspective details completely made out within a narrow strip of canvas; it was the perfection of architectural painting. He suggested quite a new

light on the construction of the metopes in a Greek temple by his picture ("The Missile," we think it was called) of a Greek girl throwing a rose through the opening left by turning round the sculptured metope on a central pivot. None of the architectural books had ever told us that. His rather recent picture of the interior of the Colosseum during a performance (not the one in the present Academy) was a masterpiece at once of perspective and of the resurrection of the probable Roman personages of the day, in the foreground. And who can forget the beautiful pictures of ancient Greek life; the marble seats with one or two figures in exquisitely coloured drapery seated on them, and the "wine-dark sea" seen over the white balustrade? It was in human expression and character that he rather fell short; the figures in his pictures were seldom interesting in themselves. But he gave one remarkable glimpses sometimes into the reality of ancient life. We remember one rather small picture of a garden in a private house on the day of "a feast of Bacchus," with the somewhat corpulent owner, who had evidently already been sacrificing very freely to Bacchus, dancing round in a ring with his children and raising a thick dust with his feet; for one moment we seemed to look into a Pagan house and to realise the meaning of Pagan life. Another remarkable thing he did, which most people have forgotten now, was a set of three little square pictures portraying a Roman of the decadence at the beginning, the middle, and the end of a banquet; they were not pleasant, but they were unpleasantly real. Another feat which he performed was the pictorial reconstruction of the Roman trireme, in his painting (not otherwise one of his best) of the meeting of Antony and Cleopatra, in which we saw in the middle distance this ancient form of battleship, with its bronze plating and its three banks of oars, built up with vivid realism. The amount of work he produced, considering its delicacy and finish, was something remarkable. Whatever their limitations, his pictures were always among the most interesting things in the year's Academy.

ARCHITECTS' ASSISTANTS AND THE
INSURANCE ACT.

AMONG the many perplexities to which the Insurance Act has given rise, its effect on architects' assistants may be counted, since we have received several inquiries for particulars of the amounts to be paid respectively by principal and assistant, and as to whether the assistant will come under the unemployment as well as the sickness clause. Upon these points we have consulted a contributor, who has made an exhaustive study of the Act. His observations on them are here given, and other points will be elucidated in a future issue. It should be understood that these articles will contain all the information upon the subject that we are prepared to give, as we wish to avoid being overwhelmed with inquiries that would be more properly addressed to the officials charged with the administration of the Act.

An architect's assistant whose rate of remuneration does not exceed in value £160 a year is subject to the Insurance Act unless (a) he is under sixteen or over seventy years of age or (b) is an indentured apprentice working without any monetary payment, or (c) is in receipt of £26 and upwards per year not dependent on his personal exertions, i.e., "private means" (in this case the employer pays 3d. per week, the assistant nil), or (d) is employed under the Crown or any local or other public authority, and a "certificate of exemption" is obtained from the Insurance Commissioners.

The assistant must obtain Form 1 from the local Post Office, and after filling it up he will receive a contribution card with spaces for thirteen payments. If he is already a member of an approved sick or friendly society, he will receive a contribution card from his society. The employer alone is responsible for the proper stamping of the cards, but the assistant must obtain the card in the first place. After that the employer should retain it

until the assistant leaves and takes it to another employer.

Each week the employer buys a 7d. stamp, sticks this on the assistant's card, and deducts 4d. from the assistant, but if preferred the stamps may be purchased monthly for assistants whose salaries are paid monthly. The only exception to this rate is in (c) above, or when the assistant is over twenty-one and yet earns less than 15s. a week, when special (low) rates are charged.

The stamp must be cancelled by writing on it the date corresponding to the week for which the insurance is paid. The official week starts on the Sunday midnight, and the employer must, before any payment of wages, affix in the proper space on the contribution card a stamp of the value of the joint weekly contribution for each week for the whole or any part of which the wages are payable and in respect of which a stamp has not already been fixed, but for all contributions payable in respect of the period to October 13, 1912, stamps must be affixed by that date whether the wages for the period are paid or not.

Strictly speaking, the stamps should be affixed each Monday, but so long as the assistant continues in health and in the service of the same employer it will be sufficient if all the stamps are affixed on or before October 13, 1912, and the corresponding day for each subsequent period of thirteen weeks. If the employment ceases or the assistant formally demands it, the employer must affix the stamps up to the date of cessation of employment or within forty-eight hours of the formal demand by the assistant.

Even if the stamps are affixed in advance, the 4d. weekly cannot be deducted from the salary or wages of the assistant until the day on which the wages are paid, i.e., they cannot be deducted in advance.

The wise assistant will join an approved society, so as to obtain the full value of the benefits under the Act.



ANTIUM: OUTSIDE THE HOUSE OF TULLUS AUFIDIUS. FROM THE ORIGINAL WATER-COLOUR BY THE LATE
SIR LAWRENCE ALMA-TADEMA, R.A.

Otherwise, he will have to become a Post Office depositor, and will then only receive as sick benefit the sums he and his employer have paid in, less 13s. 9d. per year for sanatorium and medical expenses, and plus 2d. (State grant) for each 7d. stamp used. If he is a member of an approved society he can continue to receive benefit to the end of his illness, no matter how long it may continue.

Some assistants occupy such a social position that they would not care to receive sick benefit or the services of the insurance doctor. These should become Post Office depositors, and on their death the sums of their credit can be withdrawn by their executors or other legal representative. The same applies to those gentlemen who think it would prejudice their peace of mind and impair their health if they failed to pass the strict medical examination imposed by all the approved societies. There is no medical test for Post Office depositors.

A Post Office depositor must not be confused with those who have money in the Post Office Savings Bank. The two have no connection whatever.

The assistant should see that the employer does not do anything—such as the stoppage of a normal rise of salary or wages—which will have the effect of making the assistant pay the whole 7d. per week. The Act specially prohibits the deduction of the employer's share (3d.) from the assistant's wages or salary.

Unemployment insurance does not appear to concern the ordinary architect's assistant, it being reasonable to assume that he is not engaged "wholly or mainly by way of manual labour."

A. B. S.

WHAT IS WRONG WITH THE BUILDING TRADE?

LAST week we had occasion to comment upon certain aspects of the building trade which seemed to show that the unsuccessful builder is often the architect of his own misfortunes. Our attention has now been called to a communication which seems to insinuate or to suggest that the present bad state of trade is a figment of the imagination, or that, at all events, for some more or less inscrutable reason, builders are not very keenly alert to secure business when it comes their way. Badness of trade, we are sure, is only too real and substantial; but it is probably accentuated by bad business methods. An architect, commenting upon a published interview with a well-known West of England contractor, who had laid some stress on the depression of trade, retorts: "I am not astonished at the building trade being bad in Manchester, nor do I think that it is in a very good state elsewhere, but I am inclined to think that builders do not always make the most of their opportunities. During the past month," he narrates, "I had occasion to invite tenders for the erection of a private residence. Advertisements were inserted in the Press. In response, I had five applications for quantities, and four tenders were received"—one of them in reply to a letter of invitation. Two other builders written to were too busy to spare time to tender. The highest tender was less than £2,000, and the successful offer was £550 below it! The architect comments that "such a poor response and such wide tendering do not show any very great anxiety to obtain work."

In case the relevancy of "wide tendering" to unanxiety to obtain work may not be obvious at first sight, it may perhaps be surmised that the architect regards close tendering as a sign of keenness, and *vice versa*, but in any case it would be instructive to know whether the builders were required to get out their own quantities. If they were then even so wide a discrepancy as that indicated needs, perhaps, no further explanation. But possibly it is explicable upon other grounds. The architect is no doubt correct in assuming that keenness to secure work should have the natural result of close tendering for it. Further, he would still be right if he took it for granted that tendering based on careful ascertainment of the data, and on businesslike, not to say scientific, figuring upon them,

should show no great divergency in the respective amounts, and we have always felt that the disposition to regard discrepant tendering as symptomatic of bad business methods is not wholly without justification. Not that much importance need be attached to unaccredited critics, who invariably blame the builder for everything that occurs. If the tendering is widely divergent, "These men cannot know their business." If, on the other hand, as occasionally happens, it is remarkably close, "These men must have acted in collusion."

Nevertheless, the general prevalence of loose tendering can hardly be regarded otherwise than as indicating one of two weak spots in the business of the builder—either he soars high above the reasonably profitable price, through imperfect apprehension and assessment of the requirements, or he sinks much below it, perhaps for the same reason, or perhaps because he may happen to be actuated by some motive other than that of direct profit—perhaps by a desire to outpace a rival, or possibly with the more excusable but still not altogether businesslike object of finding something for his idle men to do.

It is very difficult, however, to escape the conclusion that, as a class, builders betray in many directions, and suffer acutely from, a want of systematic business training—that they pay relatively too much attention to the practical or mechanical side, and too little to the theoretical or commercial, while the clerical staff upon whom they rely for their estimating, account-keeping, and so forth, fall short of the highest standard of efficiency from the absence of some recognised and properly co-ordinated means of special education for the somewhat delicate work of their department, as well as from the incompetency of the employer to keep them under effective supervision. Their opportunities of preparing for it depend too much upon chance and circumstance. They are left too much to "pick up" their education how they can—by their own personal observation and study, or by voluntary and spasmodic attendance at classes that, to put it mildly, are of very variable degrees of educational value. It cannot, therefore, be surprising that their estimates are so variable. That, of course, is not the whole of the story, but there can be no doubt that the absence of uniformity in one direction has its corresponding reflex in another. Would it not be wise, therefore, to devise some special provision for the better training of the builder's clerical staff? Obviously they have very important, not to say vital, functions to perform, especially when they are figuring for tenders, and the organised master builders, it would seem, might find it very well worth while to provide them with the means of becoming properly equipped for it.

Scientific observation and close calculation, as we have often found occasion to remark, are rapidly assuming cardinal importance in at least one branch of the building industry—that of reinforced-concrete construction—and business life in general is being methodised to an extent that renders old-fashioned practices obsolete. To these influences the building industry as a whole is not yet responding very sensitively. It should make haste to set its house in order and thus to arm itself with the most complete and most effectual answer to such charges as those formulated or insinuated by the architect to whose communication our attention has been drawn. To his inferential charges of want of alertness to business opportunities, and of gross inconsistency in tendering—charges which, if they were merely local and special, might be allowed to pass unnoticed, but which, in the general application for which they seem to be intended, assume considerable and perhaps vital importance—it ought to be possible to make prompt and effectual reply. If such a reply is not at once forthcoming—is, in fact, antecedently impossible—then it is to be feared that "slackness" in the building trade is a term that will admit of two distinct yet correlative interpretations, one of which, however, it is in the power of the builders themselves to obviate. They must pull themselves together, and bring their business methods up to date—that is to say, they must pay increased attention to the commercial side.



KING EDWARD MEMORIAL SANATORIUM, IPSWICH: PATIENTS' BLOCK, FACING SOUTH.

KING EDWARD MEMORIAL
SANATORIUM, IPSWICH.

The King Edward Memorial Sanatorium, Ipswich, has been built from funds raised by public subscription, and is situated in the midst of a fine stretch of heathland between the town and the sea. The site, known as Brook Hill, part of the Orwell Park estate, was given by Mr. E. G. Pretyma, M.P., and is 16½ acres in extent.

The sanatorium buildings are of red brick, the upper portion of the walls being finished in cement, roughcast and discoloured white. The roofs are covered with hand-made Suffolk plain tiles, from the yards of Messrs. Bolton and Laughlin.

The administration block is a long two-storey building, containing, besides accommodation for the staff, a large dining-room for the patients. The doctor's sitting-room, and some few other rooms, are fitted with fireplaces that have been specially designed by the architect.

The patients' block is built in the form of a crescent, and faces south. The accommodation is for forty-five men and twenty women, and comprises nineteen single, fourteen double, and six three-bedded rooms. At the back is an open-air gallery, where in the summer the patients may sleep. The illustration of the balcony shows the double-louvre doors, which, when closed, admit a great deal of air while keeping out the rain. For the accompanying illustrations we are indebted to the courtesy of the "East Anglian Daily Times" Co., Ltd., who have issued a handsomely produced booklet giving a full

account of the institution, with admirable views of the buildings and of their picturesque surroundings. We should have liked also to reproduce the plans of the sanatorium, but, for private reasons, the architect does not desire these to be published.

The architect is Mr. H. Munro Cautley, and the builders are Messrs. E. Catchpole and Sons, of Ipswich.

THE BRITISH SCHOOL AT ROME.

The first meeting of the Council of the British School at Rome, which has been reconstituted by Royal Charter, was held at St. James's Palace last week, Prince Arthur of Connaught, the President, being in the chair. The following members of the Council were present: Lord Beauchamp, Mr. Reginald Blomfield, Sir Thomas Brock, Mr. J. J. Burnet, Mr. E. K. Chambers, Mr. George Clausen, Lord Esher, Sir George Frampton, Mr. Lewis Harcourt, Sir Charles Holroyd, Sir F. G. Kenyon, Mr. T. Stirling Lee, Mr. Dermot O'Brien, Mr. F. G. Ogilvie, Professor J. S. Reid, Mr. J. S. Sargent, Mr. J. W. Simpson, Mr. Arthur H. Smith, Sir Cecil Smith, Sir Aston Webb, and also Mr. Evelyn Shaw, acting secretary.

Prince Arthur said that Lord Esher and the organisers of the new school had acted with such judgment and despatch that, within a year of the initiation of the scheme they were holding their first constitutional meeting. The gratitude of the Council was due to Signor Nathan, the Syndic, and the municipality for their

generosity in presenting the site which the new building is to occupy, in what will soon be one of the finest quarters of Rome. They were also greatly indebted to the generosity and foresight of the Board of Management of the Royal Commission for the Exhibition of 1851, and to the willing and sympathetic co-operation of the old British School at Rome, whose valuable work in the domain of archaeology, history, and letters would be continued with full efficiency under the auspices of the new body. Their acknowledgments were also due to his Excellency Sir Rennell Rodd, His Britannic Majesty's Ambassador in Rome, for the interest and trouble he had taken in the negotiations leading up to the acquisition of the site; to Colonel Humphreys, for his gift of the existing building; and to all who, either by their generosity or their helpful co-operation, had assisted in bringing the scheme to a successful issue.

Lord Esher outlined the present position of affairs. As a first stage in the construction of the new buildings, the Commissioners had undertaken to rebuild in permanent material, at a cost of about £15,000, the temporary structure of the existing Pavilion, the façade of which, from a beautiful design by Mr. Lutyens, had been much admired in Rome, and to adapt the building so as to make it immediately serviceable for art students. An anonymous donor had presented the sum of £10,000, which was to be devoted to endowment purposes, and other gifts had also been received. Until it became possible to proceed with the erection and endowment of the hostel, which it was the aim of the promoters to establish in connection with the



KING EDWARD MEMORIAL SANATORIUM, IPSWICH: ADMINISTRATION BLOCK.

H. MUNRO CAUTLEY, A.R.I.B.A., ARCHITECT.



KING EDWARD MEMORIAL SANATORIUM, IPSWICH: PORCH IN PATIENTS' BLOCK.
H. MUNRO CAUTLEY, A.R.I.B.A., ARCHITECT.

School as soon as the opportunity presented itself, the Faculty of Archaeology, History, and Letters (the old British School at Rome) would remain in its present quarters, and would carry on its work as heretofore, being transferred to the new building on its completion. The Council were asked to appoint Dr. Thomas Ashby, the Director of the old School, to be the Director of the British School at Rome; and Mr. Evelyn Shaw, secretary to the Royal Commissioners for the Exhibition of 1851, to be honorary general secretary; Messrs. Fladgate and Co. to be honorary solicitors. The Commissioners were allowing their office to be used in the meantime as the headquarters of the School in London, and providing in the first instance the necessary clerical assistance. They were also asked to pass resolutions authorising the Executive Committee of the School to make the necessary arrangements for the conduct of the general affairs of the School, and accepting the generous offer of the Commissioners to establish in connection with the School annual scholarships in architecture, sculpture, and decorative painting, schemes for the award and tenure of which were to be prepared by the respective Faculties for the approval of the Commissioners.

The resolutions alluded to having been formally moved from the chair and carried, the Council adjourned.

THE COMPLETE HEATING ENGINEER.*

To label the first issue of a book "So-and-so on Such-and-such" is to set up some slight degree of prejudice against it;

unless, indeed, it be some skittish production like "Jones on the Universe," or some work of established reputation of which a later edition is edited by another hand than that of the author, with whose name the editor makes free because it has become familiar and distinctive in a particular association. Hence, while "Fenn on the Funds," or "Leaning on Quantities," may be perfectly legitimate and even useful forms, "Barker on Heating" seems perhaps a trifle premature or anticipatory in a first edition. It would have been in better taste to wait until the book becomes an acknowledged classic. It bears, however, another title—"The Theory and Practice of Heating and Ventilation"—which is presumably that which the author suggested and would have preferred. It is only fair to add that the character of the work seems to justify the anticipation that it will at once take standard rank.

In coming to grips with his subject, the author has a wise word or two on the relationship between theory and practice, on which point he moderates with the judicial authority that belongs to one who is conversant with both aspects. It is useful to make this relationship clear; for if the philosopher who devoted his life "in search of the absolute" is dead, he has left many disciples, some of whom, conceiving that in certain matters they have found it, are applying it with results that are occasionally somewhat disastrous. We remember, for instance, a wrangle in a court of law some years ago, in which a judge, having acquired—probably from some text-book that he had consulted for the occasion—exact knowledge upon a certain point, unloaded it with crushing effect on an expert witness. The pity of it was that the witness happened to be right; and so, in a manner of speaking, was the judge; but there was no one to reconcile their apparently divergent but really compatible

views, and this unnecessary disagreement discountenanced evidence that was of vital importance to the issue. If Mr. Barker's book had been then available, the judge in question would have been almost certain to consult it, and he would have found in the preface some observations that, while by no means shaking his confidence in science, must have made him less cocksure about the absolute validity of its application to the issue he was trying, and then, instead of bullying the witness into a state of limp despair, and despising him for a man who was daring to oppose mere rule-of-thumb to exact scientific ascertainment, he would have respected the man's practical knowledge and, instead of discrediting it as a thing of naught, would have accorded it full weight.

Mr. Barker, who to scientific training and university scholarship adds several years of practical experience, is in an unusually favourable position to assess the respective values of theory and practice, and to show how they can best be brought into harmony. He states expressly at the outset that the object of his book "is to place before English-speaking readers a detailed explanation of the application of scientific principles to the chief problems with which the heating engineer has to deal, and, further, to indicate the limits within which these principles are applicable in practice." If these limitations could have been indicated convincingly to that judge, he would have arrived at a different decision, and he cannot be envied the qualms of conscience he will feel when he finds from this book that, as Mr. Barker says, in this subject it is especially difficult to reconcile sound science and sound common sense. This, however, is a task that, as we have seen, the author is peculiarly well qualified to perform.

In his earlier chapters—the first dozen or so—he deals very lucidly, though, of course, not exhaustively, with the scientific aspects of the problems with which the heating and ventilating engineer has to deal. He treats successively of the properties of matter, motion, and energy; of heat, air, water, and steam; of the flow of



IPSWICH SANATORIUM:
BALCONY IN PATIENTS' BLOCK.

* Barker on Heating: The Theory and Practice of Heating and Ventilation. By A. H. Barker, B.Sc., B.A. (London), Senior Whitworth Scholar, 1895, etc. Pages lxxvi. + 640, 10½ ins. by 7½ ins., price 25s. net. London: The Carlton Press, 199, Strand, W.C. 1912.

fluids; the hygiene of ventilation; the theory of the transmission of heat, and so forth. Thenceforward, in a matter of twenty or more chapters, the work is almost purely practical. At the beginning of the very important chapters on the determination of pipe sizes for a hot-water installation, the author shows that, as becomes the scientifically trained mind, he is prepared to recognise merit wherever he sees it. Himself the patentee of heating systems, he never obtrudes them in his book; and in remarking that the usual systems of circulation may be classified into four main sub-divisions—two-pipe, single-pipe, one-pipe series, and circuit-pipe—he admits that there are a great number of different methods of arranging pipes, and that there are, indeed, an infinite number of different systems, “any of which, if properly designed, will maintain a satisfactory circulation.” This is, perhaps, to go too far in the direction of catholicity; but it shows the right spirit of open-mindedness.

It would no doubt be fairly easy to make a very bulky and an exceedingly useful book on this subject by a process of pure compilation, or by the hardly more original method of sifting, boiling down, or digesting the immense amount of material that is available. This latter course cannot be entirely avoided, and Mr. Barker was bound to take note of the labours of his predecessors in the same field, and, in fact, of all the effective data upon which he could lay his hands. But he has done much more than merely collect and digest the conclusions of others. These he has subjected to critical examination; and he has himself contributed many results of his own painstaking experiments and observations. Thus it is believed that his geometrical proofs of the principle of the theory of hot-water circulation, and the method of pressure diagrams proposed, are entirely new; and almost as estimable as absolute originality—perhaps, indeed, more valuable still in the present circumstances—is the attention given to certain important points that in former treatises have been unduly neglected—“in particular, such subjects as the flow of fluids, the conduction of heat, the theory of fans, and even the principles of the ordinary low-pressure circulation of water and of air, are matters of which it is very difficult to find any convincing elementary explanation in any language,” and special attention has therefore been given to these points. Moreover, following the excellent work—of which but little advantage has been taken in this country—done by Rietschel, Mr. Barker has not only provided an excellent summary and explanation of the German's conclusions, but has supplemented them, or at all events simplified and elucidated them, by means of an extensive series of experiments of his own. The numerous tables, also, have been in most cases calculated by the author, who also has drawn nearly all the diagrams, of which there are apparently about 150, all of which are justified, not merely by the author's deftness in graphic presentation, but by their real utility; while some of them appear to be of considerable importance either as showing the results of Mr. Barker's independent investigations or as focussing the conclusions of others; as, for instance, in the comparison of the formulæ of Weisbach and Poiseuille with respect to the friction of water in pipes.

The heating and ventilating engineer who masters the contents of this portly volume will have put himself in possession of all that is known, if not all that is worth

knowing, on a subject that has been hitherto treated, as a rule, more tentatively than positively, either by writers who were much more scientific than practical, or by those of whom the converse would be true; whereas, it is quite clear that in the present case we get an almost ideal combination; with a result which, in our judgment, surpasses in value anything that has hitherto been done on the subject.

R.I.B.A. PROBLEMS IN DESIGN.

As already announced in the columns of this Journal, the alternative Scheme of Testimonies of Study for the Final Examination of the Royal Institute of British Architects will come into operation at the option of the candidates in November next, and after the end of the year 1913 the existing Testimonies of Study for this examination will be abolished. Six alternative Problems in Design will be set by the Board of Architectural Education each year, and candidates for the Final Examination must submit designs in answer to at least four of these problems. These alternative problems will be published twice a year, three sets in January and three in July. This is done for the convenience of candidates, but it must be distinctly understood that the time for sending in the designs in answer to these problems is strictly limited. Thus the designs for Subject IV. must be sent in to the Secretary of the Institute by August 31st next, those for Subject V. by October 31st, and those for Subject VI. by December 31st. (This time will be extended for students in the Colonies; see dates in list of subjects below.)

The drawings must be on imperial sheets, and candidates must affix their full name and address to each drawing submitted.

The subjects for the second half of this year are as follows:—

Subject IV.

(a) A Senate House, on an isolated site, for a modern University, to consist of a council chamber to seat sixty persons, with ante-room, waiting-room, and cloak room, and two committee rooms each to seat twenty persons around a table. Plans, sections, and elevations to be to $\frac{3}{8}$ scale. Details both external and internal to $\frac{1}{2}$ -in. scale and shaded.

(b) A Bridge carrying a road 25 ft. wide between parapets over a canal 40 ft. wide. The bridge may be built of brick, stone, or reinforced concrete. Drawings to be to $\frac{1}{2}$ -in. scale and to show complete construction. Important details to 1-in. scale. Calculations to be given.

Subject V.

(a) A Picture Gallery in a public park, consisting of six galleries of varying size, but of not more than 8,000 ft. super. in all. The galleries are to be arranged with cloak-rooms, etc., so that they can be used for receptions. A room for a curator and a packing room are to be included. Plans, sections, and elevations to be to $\frac{3}{8}$ scale. Details both external and internal to $\frac{1}{2}$ -in. scale and shaded.

(b) A Village Church to seat 300. May be in any style, but with complete details of construction. Drawings required to $\frac{3}{8}$ -in. and $\frac{1}{2}$ -in. scale.

Subject VI.

(a) A Colonnaded Screen, 100 ft. long, joining two wings of a public building 60 ft. high. The screen to have two carriage entrances through it. Shaded drawings to $\frac{3}{4}$ -in. scale with 1-in. scale details.

(b) A fire-resisting lock-up warehouse on a site 40 ft. by 80 ft., with two frontages 40 ft. wide to two parallel streets. The site is between buildings so that no light can be obtained on the 80 ft. sides.

The building is to have six storeys, and each floor is to be capable of sustaining a load of 4 cwt. per super foot. Drawings required $\frac{3}{8}$ -in. and $\frac{1}{2}$ -in. with $\frac{3}{8}$ full-size details of important parts of any steel construction.

N.B.—A sketch perspective may be included in any of the foregoing.

Dates for Submission of Designs.

	Subject IV.	Subject V.	Subject VI.
U.K.	31 Aug. 1912.	31 Oct. 1912.	31 Dec. 1912.
Johan'burg.	31 Oct. 1912.	31 Dec. 1912.	28 Feb. 1913.
Melbourne	30 Nov. 1912.	31 Jan. 1913.	31 Mar. 1913.
Sydney	30 Nov. 1912.	31 Jan. 1913.	31 Mar. 1913.
Toronto	30 Sept. 1912.	30 Nov. 1912.	31 Jan. 1913.

FIRE PROTECTION OF HAMPTON COURT PALACE.

It is reassuring to read that the new 15-in. main giving a high-pressure water supply to Hampton Court Palace has now been completed. At a preliminary trial of the pressure some unexpected results were obtained. Three of the Palace firemen were stationed near the Privy and Dutch Gardens with fire-hose and delivery pipes, and when the water was turned on it came with such force that the firemen were all knocked over and dropped the brass nozzles, and the water ploughed up great grooves in the gravel path. Such is now the pressure of water that powerful jets can be thrown right over the roof of the Great Hall, which is the highest part of the Palace, without the aid of the steamer, and when the full power is turned on it will tax the strength of two men to manage each delivery pipe.

The Nilfisk Vacuum Cleaner.

We regret to observe that a slight error has occurred in giving the name of this vacuum cleaner, which in a paragraph in our last issue is rendered “Wilfisk.” The name, of course, is the “Nilfisk” Vacuum Cleaner. It is supplied by Messrs. Gillespie and Beales, Amberley House, Norfolk Street, Strand, W.C.

Death of Mr. Robert Herbert Measures.

We regret to announce the death of Mr. Robert Herbert Measures, formerly managing director of Messrs. Measures Brothers, Ltd. Mr. Measures, who was seventy-four years of age, had been advised to undergo an operation, and with that object had been brought from his home at Burnham-on-Sea to London, where he died on June 24th. Of the trouble through which Mr. Measures passed last October this is not the place to speak. He had, at all events, built up, by industry and integrity, a large business, and had enjoyed during a long lifetime a high character for integrity and benevolence.

Pathological Wing for Welsh Medical School.

As a mark of appreciation of the recent visit of their Majesties to the King Edward VII. Hospital, Cardiff, an anonymous donor has forwarded a gift of 10,000 guineas for the building of the new pathological wing of the institution which is to be erected for the Welsh Medical School, the joint establishment of the Hospital and University College of South Wales and Monmouthshire. It is estimated that £50,000 will be required to complete the medical school buildings.

THE RADCLIFFE INFIRMARY,
OXFORD.

The new wing now about to be added to the Radcliffe Infirmary, Oxford, is to occupy the site, with a considerable increase of area, of the existing admission department, and is to embody the requirements of that department, in an extended and improved form, upon the ground floor, while, upon the two upper floors, provision is made for the scientific requirements of a modern hospital. The new wing will stand almost at a right angle to the front of the eighteenth-century building (now the administration block) which formed the original hospital founded by Dr. Radcliffe, and facing eastward to the Woodstock Road. Connection with the old building is to be maintained on the ground and first floors only. The site is a restricted and somewhat difficult one, being closely bounded on the south side by the wall and buildings of Somerville College, on the east by the Woodstock Road, and on the west by existing hospital buildings and the access thereto; while on the north, where is the fine entrance court of the old hospital, some restriction is imposed by the necessities of light and air for that building.

The basement is to contain store cellars, chambers for calorifiers and refrigerating apparatus, the mortuary (connected by a special enclosed lift with the chapel overhead and the pathological department on the second floor), and a store for bicycles, always a strict essential of life

in Oxford. The basement is connected with all upper floors by a passenger lift and staircase, and with the dispensary by a smaller service lift.

The ground floor contains the out-patients' hall, approached through an ample waiting hall, six consulting-rooms, with dressing-rooms, casualty, operating, and recovery rooms, the dispensary and dispensary waiting-hall, as well as the chapel, connected with the mortuary by the aforesaid lift, but approachable only by the carriage-way on the south side. These requirements, with the porters' lodge, almoners' office, and men's and women's latrines, occupy the whole ground space.

The first floor provides dental and vaccine rooms, photographic and therapeutic X-ray rooms, an electric bath-room with cooling-room, and, in the east or front block, room for the staff and the porter's dwelling, with all necessary lavatories, etc.

The second floor contains the pathological department consisting of post-mortem room, with an external hall for the lift and for trolleys, the clinical, bacteriological, and chemical laboratories, with cold stores, work-rooms, incubating and sterilising rooms, a photographic dark room, and bathrooms, and lavatories, etc. There is, in addition, a large lecture-room for nurses, and the east, or front wing, is occupied by the professors' room, a large work-room, an instrument room, and a combined library and examiners' room. The last two rooms, perhaps, need the explanation that while the Radcliffe

Infirmary is not actually affiliated to the University, a certain amount of medical teaching for the University, and of examination by its appointed examiners, has to be provided for.

As the plans show, the out-patients' hall is lighted, and in part ventilated, by a large skylight lantern, the building above the ground floor being arranged around this with an open side to the north, so as to gain all possible advantages of light and air.

The two main façades of the new building—i.e., those to the north and east, are to be faced with Clipsham stone, the remainder being faced with buff stock brick. The roofs are to be covered with grey slates, and the flats with asphalt.

The floors, staircases, columns, and roof of out-patients' hall, and all flats are to be formed in reinforced concrete. Terrazzo paving and terrazzo and tiled wall linings will be freely used.

The contract has, after the receipt of competitive tenders, been let to Messrs. Wooldridge and Simpson, of Oxford. The buildings have been designed by Mr. Edward Warren, F.R.I.B.A., in close collaboration with Dr. D. J. Mackintosh, M.B., M.V.O., director of the Western Infirmary, Glasgow.

[The accompanying plan of the ground floor we are able to publish by courtesy of "The Hospital."]

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

Cross-Lighting and Ventilation.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

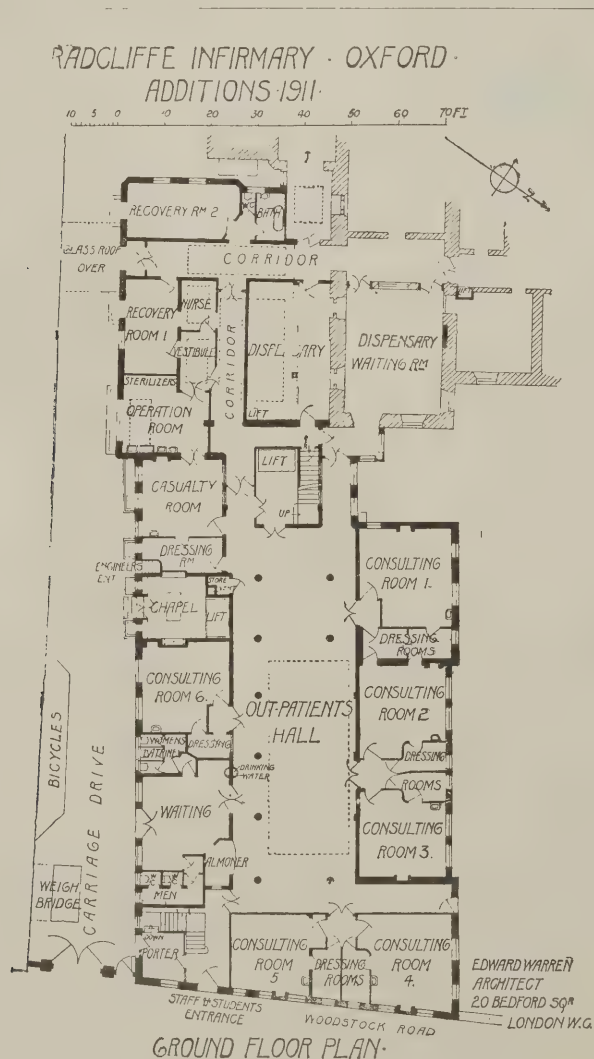
SIR,—Permit me once again to revert to the question of cross lighting and ventilation. I do not see from your foot-note to my letter on page 655 of your last issue that you have in any way added to the case for mechanical ventilation. Why is it more difficult to ventilate a large school than a small one by means of cross ventilation? At the present time plans are being submitted to the Board of Education showing a school for 1,200 children at Ripley in this county in which cross ventilation is obtained to the whole of the classrooms, cloakrooms, assembly halls, and other apartments.

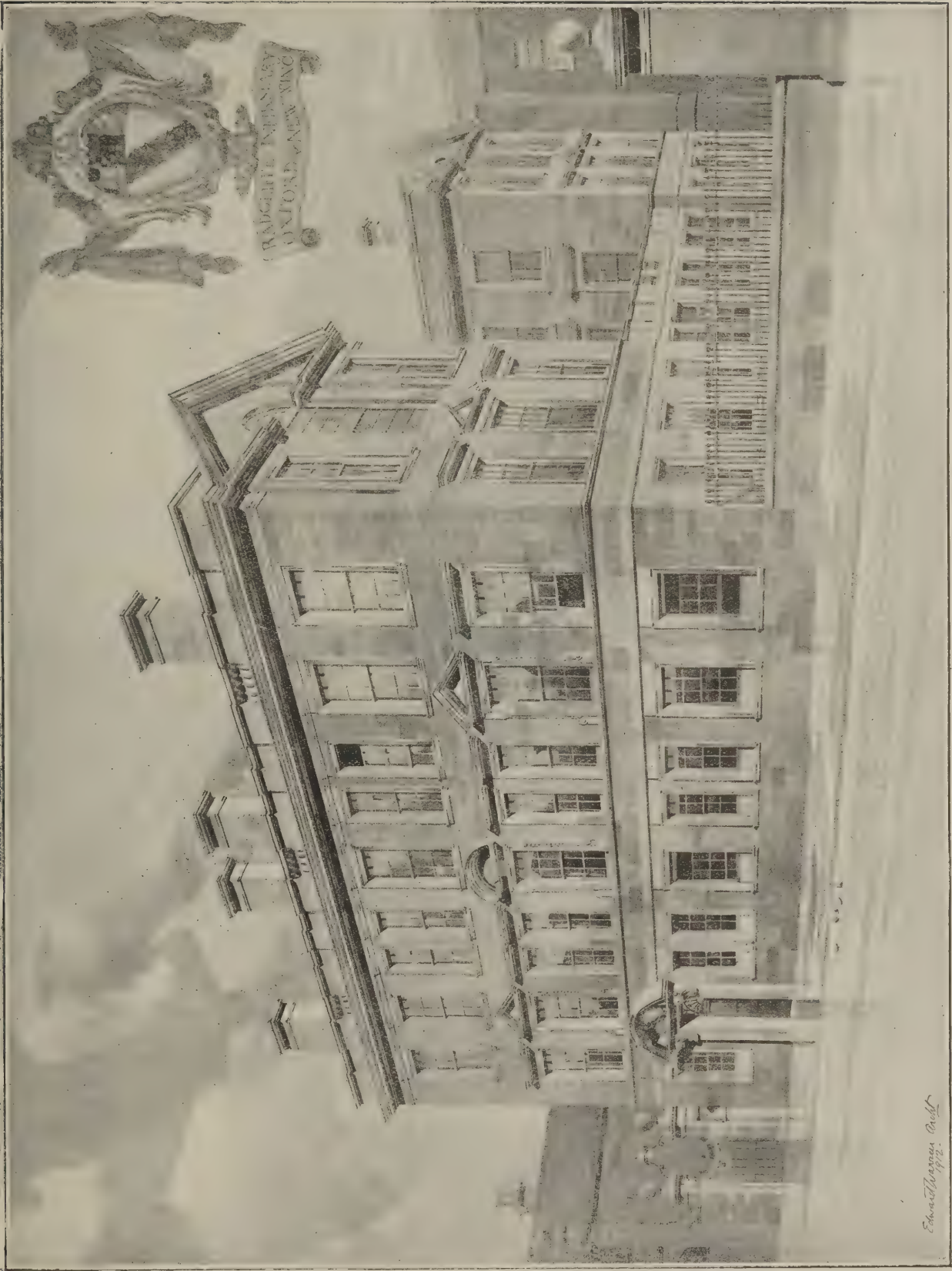
As to your reference to microscopic examination of the air, I would point out that in my previous letter I showed that by cross ventilation the air was changed ten times per hour. This was proved by means of several anemometer tests.

If, after such a condition of things, the air is still impure and requires microscopic examination, such a neighbourhood must be very unhealthy, and it is a wonder anybody is alive. Is one to suppose that mechanical ventilation removes all the impurities from the air? I know that there are screens for intercepting dust and micro-organisms, but what about the dirt which gets on the sides of the ducts and over which the air has to pass after passing through the screen? Surely air coming direct from the outside air through hoppers in which dirt cannot accumulate will be purer than air which has to pass through a considerable length of duct?

GEORGE H. WIDDOWS, A.R.I.B.A.,
Architect to the Derbyshire Education Committee.

[A reply to the above will appear next week.—Eds. A. AND B. J.]





EDWARD WARREN, F.R.I.B.A., F.S.A., ARCHITECT.

Royal Academy Exhibition, 1912.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

ENQUIRIES ANSWERED.

R.W.P. on Adjoining Houses.

SUBSCRIBER writes: "A common R.W.P. takes the water from the roof of two adjoining houses. From the gutter down to about 10 ft. above ground level it is fixed on "B's" house and then it is brought over by means of a swan neck on to "A's" wall and connected to a drain on "A's" property. Who is liable for repairs or renewal?"

—Each owner has an equal right to use the common rain-water pipe which receives the rain-water from both houses. "B" is the actual owner of the upper portion of the pipe, and "A" is similarly the owner of the lower portion of the drain. Each owner must repair his own part, and neither must prevent the other from the use of the whole, because each person possesses a right of easement over the other's property.

F. S. I.

Foundations Over Coal Seam.

H. and S. (Yorkshire) write: "The foundations of a large warehouse are believed to be situated over the spot where many years ago a seam of coal was worked at a probable depth of 30 ft. below ground surface. The warehouse in question would be six storeys in height, the weight on each stanchion or column being about 240 tons; the columns would be in spaces of 25 and 12 ft. span. The ground to the depth of 6 ft., already excavated, appears to be in layers of hard, narrow stone. Do you consider it is necessary to go down to the underside of the coal bed at a depth probably of 30 ft. as a foundation for the columns, or could footings of concrete be arranged at a shallower depth to carry, say, two tons to the square foot?"

—This case is very indefinite; there is no certainty as to the existence of the coal workings—only an assumed probable depth for them—and no knowledge of the strata for more than 6 ft. from the surface. Unless the column foundations are carried down to a solid bottom there will necessarily be some risk of settlement, but the chances are probably small and can possibly be gauged by inspecting other buildings in the neighbourhood. If these are sound, a distribution of the pressure in the proposed warehouse will probably be satisfactory. If the columns are spaced 12 ft. in one direction and 25 ft. in the other there might be a continuous foundation of concrete in the 12 ft. direction, with a width of 10 ft., reinforced to meet the bending moments.

HENRY ADAMS.

House Drainage and Hot-Water Supply.

M. A. C. writes: "In my neighbourhood the only drainage is by cesspools, of which two types are used. (1) The drains from the house and the surface and foul water drains empty into a cesspit some 7 ft. diameter by 13 to 15 ft. deep, and then open brick-lined for varying distances to the chalk, which is sometimes 60 or 70 ft. down. All gullies, drains, etc., are properly trapped, and soil pipes ventilated. This cesspit is only cleaned out every few years. (2) The closet and foul water drains from the house empty into a sealed septic tank, brick in cement, cement-lined at bottom, top, and sides, and some 8 ft. in diameter by 13 ft. deep. These drains are all trapped and sealed, the soil pipe being ventilated by top outlet, but the trap near the cesspit, with its fresh air inlet, is often removed, as it is apt to get foul. The drain pipe descends inside the septic tank

to within a few feet from the bottom, and all solids, etc., are said to find their way up to the top, to generate gases and liquefy, the gas forcing the liquid downwards, and an overflow pipe at the top (bent downwards some 18 in. or 2 ft. below the top of the tank, and on the opposite side to that on which the house drain enters) conveying this liquid to a soakaway pit about 3 ft. in diameter and some few feet away. The surface-water drains are taken direct to this soakaway and not to the septic tank, which never seems to be cleaned out or to require it, the neighbourhood being extremely healthy.

"There are fresh-water tanks to collect the rain-water from the roofs, but these are always removed some distance from the septic tank. They are 8 ft. in diameter by 13 ft. deep in most cases, and are built with domed tops, of brick in cement, cement-lined inside and clay-puddled outside, so that no soakage can take place. An overflow pipe prevents their getting too full, and in some cases the water is treated by a gravel and sand filter before it enters the tank. In the cottages earth closets only are used. Which is really the better of these two methods? Should the intercepting trap be used, and do the disinfectants which are used in the bath, w.c., and sinks in the house do any harm by checking the action of the microbes in the tank? If a typhoid case occurred, what precautions should be taken?"

"Some of the houses have water laid on from the main as well as the tank water, but this main water is so hard that I always use a still on the kitchen range, with excellent results. The bath water boiler furs up so rapidly that I should also like some information as to the efficacy of a coil in the hot-water cylinder driven by soft-water taking the heat *via* this coil from the boiler to the cylinder so as to avoid furring. What temperature can be got in the hot-water cylinder? In this, I understand, the water never boils."

—There is no doubt that, of the alternatives mentioned, the better way to deal with the sewage from the isolated buildings is that which includes the provision of a septic tank. The tank should be rectangular in shape, about 5 ft. deep, and, say, three times as long as it is wide. It should be watertight, roofed over, and ventilated by a shaft 6 ft. or more high. The inlet and outlet should both dip in about 2 ft. below the water level. An intercepting trap with fresh-air inlet should be provided on the house drain immediately before it enters the tank, and the upper end of the drain should be ventilated through the soil pipe. In those cases where traps have been removed because they have checked the flow and become foul, the cause of the trouble is probably due to their being of improper design or wrongly set. If the drainage system is a "separate" one, only the foul water drains should enter the septic tank. Disinfections inhibit the growth of the bacteria, and kill them if a strong solution is used. It is probable, however, that, although the disinfectant may be admitted to the drain in a concentrated form, when the liquid enters the septic tank and mixes with its contents it becomes so diluted as not materially to affect the action of the tank for any considerable period. The medical man in attendance will probably advise upon the precautions to take in case of typhoid fever, but, as a general rule, the infected excreta and urine will be sterilised by corrosive sublimate 1 part in 1,000 before being emptied into the drains, so that the chief risk will occur during the few days before the disease is recognised. The disease germs

may or may not be retained in the septic tank, and consequently the disposal of the effluent must be carefully considered. A septic tank does not purify sewage, but merely breaks up the solid matter, liquefying some of it, but allowing the bulk of it to pass out. The effluent should therefore be treated on filters, and, generally speaking, a soakaway pit will not be satisfactory. In this case, as the soil consists of chalk some 60 or 70 ft. deep, the matter of prime importance is the level of the sub-soil water. If it is near the surface it will be polluted, but if it is very deep there is a reasonable probability of the septic tank effluent being purified before it reaches the water. If the effluent is discharged on to the top of the stones they will, if fresh air has free access to them, act as a filter. There is no objection to the surface water entering at this point provided the area is sufficiently large having regard to the amount of water. In using the rain-water for domestic purposes, it is desirable first to pass it through a separator as made by H. J. Rogers, Haslemere, Surrey, otherwise the suggested arrangements, including the gravel and sand filters, are satisfactory. Earth closets are very suitable for country cottages.

With reference to the hot-water apparatus, the primary circulation may be limited to pure water passing through a coil in the cylinder, but there will be some loss of heat, although, possibly, not so much loss as is occasioned by the furring up of the boiler at present. An expansion pipe must be attached to the primary circulation when confined to the coil.

HENRY ADAMS.

CROMWELL HOUSE, HIGHGATE.

With respect to the report of the proposed sale to an American of the fine old historical staircase of Cromwell House, Highgate, Mr. Arthur Lucas and Mr. John Murray, respectively chairman and vice-chairman of the Hospital for Sick Children, Great Ormond Street, for which Cromwell House is now used as a convalescent home, state that rumours of the proposed sale reached them privately, but no communication whatsoever has been made to the committee of the hospital, or to any of the officials, concerning the suggested sale or dismemberment of the house by the owners.

In 1869 the committee of the hospital acquired a sixty years' lease of Cromwell House, which has ever since that time been used as a convalescent home. It is obvious that a building some centuries old is not, in all respects, the most suitable for a hospital in these days, and some time ago the committee endeavoured to dispose of the lease with a view to moving further afield and into newer premises. The attempt failed, however, and since then a large sum of money has been laid out in adapting the premises to the purpose. No one can touch the house without the consent of the committee till 1938, when the lease expires; nor, in view of the expense incurred, are they disposed to turn out unless they receive full compensation.

On the other hand, the hospital is sadly in need of funds, and if a fully adequate offer were made, it is doubtful whether the committee would be justified in refusing it, unless the public will come to the rescue.

The house is undoubtedly of exceptional historical and artistic value and interest, and it is suggested that some effort should be made to secure it for some public purpose, and to clear it from the contiguous houses. In addition to the staircase, it

contains very fine oak panelling, which is buried under several coats of paint which have accumulated in the course of centuries.

So far as funds and private donations permit, the committee have had this paint removed, but the process is a very expensive one, and much still remains to be done. Throughout, the greatest care has been taken to preserve the historical character and artistic feeling of the house and its decorations.

THE R.I.B.A. GOLD MEDAL.

At the meeting of the R.I.B.A. held on June 23rd, Mr. Basil Champneys, B.A., was presented with the Royal gold medal, conferred upon him by the King, on the recommendation of the Council of the Institute, in recognition of his distinguished professional career. Mr. Leonard Stokes, the president, in making the presentation, reminded his hearers that this was the highest honour that could be bestowed upon a member of their profession. He recalled the good work the recipient had achieved in the buildings at Oxford, Cambridge, and other parts of the country, and said that Mr. Champneys, besides being a distinguished architect, was also well known as a writer possessing genuine literary power. Though he was not a member of the Institute, they had the greatest admiration for the work and character of Basil Champneys, and the well-merited token of their Royal patron's approval was made on the unanimous recommendation of the members of the Institute.

Mr. Basil Champneys, in reply, said he regarded the medal not as a symbol of retirement but as an encouragement of future effort. After passing in review the study and practice of architecture during a period of not much less than half a century, he re-

marked that there were certain problems already presented to architecture which must severely tax ingenuity and invention in the immediate future. Their art had been defined as that which "makes construction beautiful"; but commercial considerations, entailing economy and speed, were leading to the extensive use of a method by which metal construction was clothed with an external facing practically independent of it. In the absence of any organic relation between structure and external appearance, it was hard to see how the principle of that definition could be complied with. Similar influences dictated that the ground floor of commercial buildings, the majority in towns, must show an unbroken expanse of glass; but a superstructure apparently carried on an unsubstantial material could scarcely fulfil the primary conditions of architectural integrity. He hoped a younger generation would be able to deal with these and similar problems so that a large proportion of necessary buildings should not be permanently banished from the domain of legitimate art.

The President announced, amidst cheers, that the Council had decided that it would do honour to itself by adding to the roll of Fellows the name of Mr. G. Gilbert Scott, the grandson of Sir George Gilbert Scott, and designer of the Liverpool Cathedral.

Mr. Giles Gilbert Scott, F.R.I.B.A., was born in 1880, and educated at Beaumont College, near Old Windsor. Among his principal works, besides Liverpool Cathedral, are the Church of the Annunciation, Bournemouth, and the Chapel of the Visitation Convent, Harrow. The amended design for Liverpool Cathedral, showing a single large tower in substitution for the smaller twin towers of the original design, thus effecting economy of space, improving the lighting, and providing central accommodation for 4,000 worshippers, was published in our issue of December 7th, 1910.

A view of the Lady Chapel and choir was given on September 20th, 1911; a perspective view of the Cathedral, from the south, on October 11th, 1911. Two important articles giving full particulars of the construction of the Cathedral, appeared respectively in the issues for February 7th and 21st, 1912.

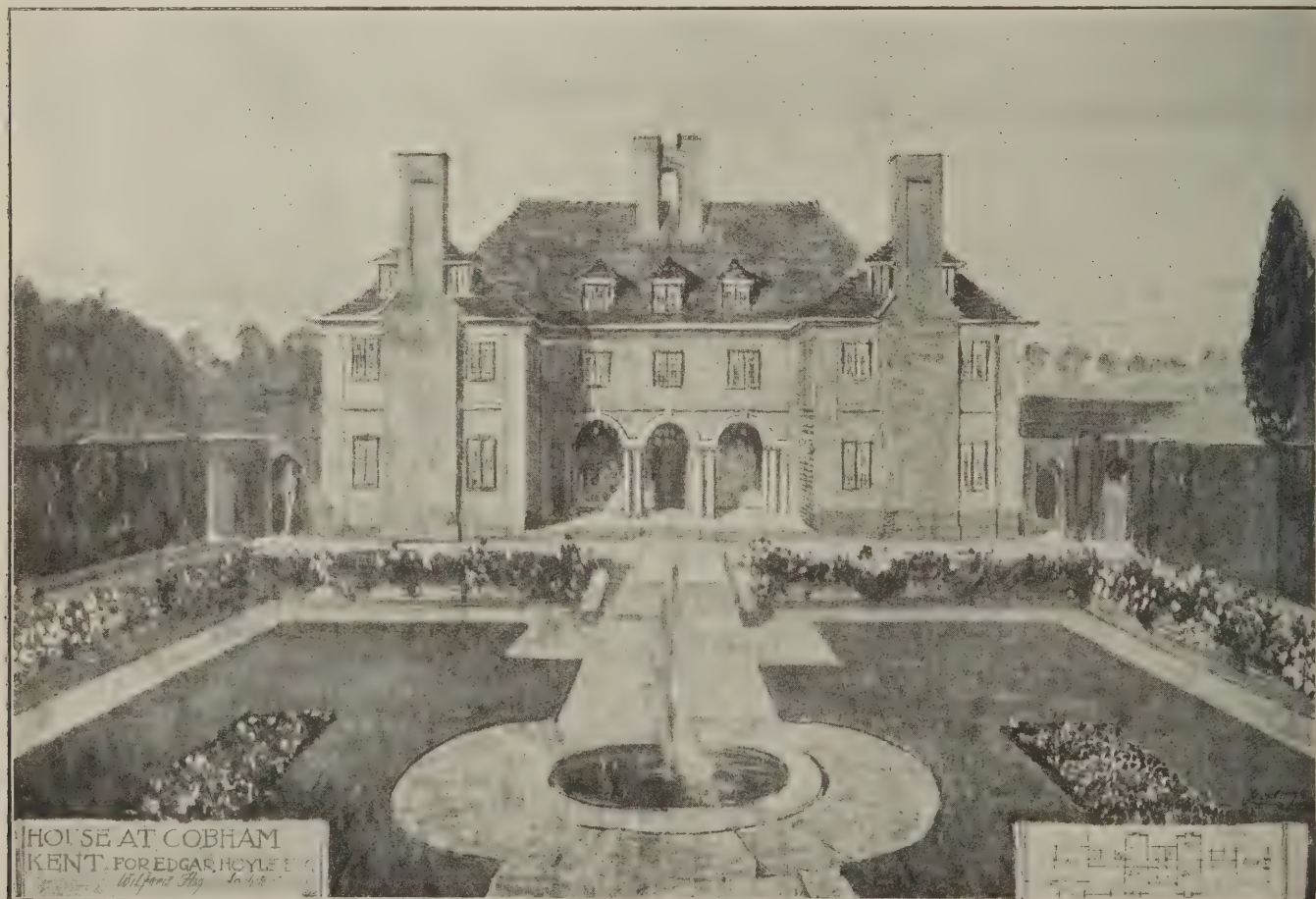
A large portrait in oils of the president was unveiled, and presented, on behalf of the subscribers, as a gift to the Royal Institute. Mr. J. W. Simpson, performing the unveiling ceremony, described the portrait as a characteristic likeness of their president; the artist, Mr. William Orpen, having produced an admirable work of art worthy to be placed beside those of their president's predecessors. He concluded by moving a vote of thanks to the president for his two years of useful service.

HOUSE AT COBHAM, KENT.

The materials for this house are intended to be 2 in. hand-made red bricks, hand-made roofing tiles, oak frames, metal casements, Portland (white-bed) columns, and plaster cornice. The architect is Mr. Wilfred Hoyle, A.R.I.B.A., of Gravesend.

MANCHESTER ROYAL EXCHANGE.

The Committee of the House of Commons, of which Mr. W. G. Nicholson is chairman, passed last week the Bill providing for the rebuilding of the Manchester Royal Exchange at an estimated cost of £1,000,000, subject to certain conditions as to exchange of lands between the directors of the Exchange and the Manchester Corporation. There was no opposition to the preamble of the Bill, which has already passed through the House of Lords.



HOUSE AT COBHAM
KENT. FOR EDGAR HOYLE

Wilfred Hoyle

CURING DAMP COTTAGES.

Large towns are less troubled with damp dwellings than country districts simply because the houses to a great extent shelter and protect each other; the external portions of the buildings are limited in some cases to the front and back walls, the remainder forming party walls, while a certain amount of space round such external walls is protected from soakage by foot-paths of other pavings. Country cottages, on the other hand, are exposed to drifting rains from all points of the compass, and unpaved paths or garden borders are usually their close surroundings.

Damp in dwellings, writes Mr. Thomas Potter, in "The Journal of the Society of Estate Clerks of Works," results in the main from two causes; it may rise from the bottom of the walls and be carried upwards by capillary action to some considerable distance, or it may pass through the entire thickness of the walls by reason of their spongy or absorbent nature. In the former case an effectual remedy is provided by adopting a damp-proof course of slate in cement, vitrified stoneware, asphaltic felt or other well-known impermeable material; possibly no new dwellings on any estate are erected now without this precaution, but as it was quite unusual till within a comparatively recent period, old cottages and other dwellings are seldom provided in this way, and where damp exists therefore the only alternative is to cut out a chase in the walls just above ground level, and below the floor, two or three feet in length, and insert a damp-proof course. The walls of many houses, dry in all other respects, are damp and dangerous solely from this lack of precaution.

There are many remedies proposed and practised to cure damp walls; liquids in which silicates form the basis, slates nailed and lapped as on a roof, or a coating of Portland cement and sand, are the specifics more generally adopted.

In connection with the condensation of watery vapour in buildings where the walls have not got thoroughly dry, it is well known that water will run down the windows during the night and form quite a puddle on the window board or ledge, sufficient indeed to convince the tenants of cottages (who as a rule do not believe in the condensation of moisture) that it is rain which has come through badly fitting windows.

Damp floors, whether of brick, stone, or any other material, are perhaps more dangerous to health than damp walls. The cause is usually from the paving being laid direct on the natural soil, and perhaps below the outside ground level. This may be remedied in old houses by raising the floor level at least six inches from the ground or outside pavings, and bedding the pavings on four to five inches of Portland cement concrete, having beneath three or four inches of cinders, broken brick, or dry hard core. Perhaps better still is to cement the concrete with cement and sand, half of each, and three-quarters of an inch thick, in which "Ceresit" or "Pudlo" has been mixed, and this makes a perfectly non-absorbent floor.

When complaints are sent in of the wet state of stone or cement floors through "giving," it is well to make an inspection on a bright day following a damp and foggy one, when the floors will probably be found absolutely dry, but the cottage tenant will tell you what a wet state they were in yesterday. It will give an op-

portunity of explaining the cause and remedy, but the possibility is your explanation will be taken with more than a grain of salt, and you will be credited with a good deal of ignorance in not knowing that when there is water inside a dwelling it must *per se* come from the outside. But there are many vagaries concerning damp houses, the cause and cure; sometimes it is said the rooms are quite dry, but the cupboards are damp, and that articles of clothing kept therein smell "musty," while shoes kept at the bottom go mouldy if left long. This is easily explained; very little movement of air is possible, and there is no through ventilation in cupboards, the doors are kept closed or partially so, and the damp air thus shut in has every chance of becoming stagnant, while at floor level it is even worse, because the highest temperature is found at the ceiling and the lowest at the floor.

If walls are chronically damp, the ancient system of battening and plastering is sometimes recommended, but it must be apparent that a thin plaster screen cannot take away from damp walls their injurious properties. Lining damp walls with laminated lead previous to papering, and with Willesden waterproof paper, are both useful processes where the damp arises from some cause which has been remedied; if, however, a dwelling is radically damp, and a damp-proof course inserted through all walls, and cementing the outside of external walls do not prove effectual, it would be an act of humanity to pull it down; but in nine cases out of ten these methods effect a cure.

HEATING INSTALLATION AT THE
BANK OF ENGLAND.

Messrs. Mackenzie and Moncur, Ltd., of Edinburgh, London, and Glasgow, have been entrusted with the designing and installation of a central heating apparatus and hot-water supply system for the whole of the Bank of England. The heating will be effected with hot-water pipes and radiators, and as the buildings cover $2\frac{1}{2}$ acres of ground the circulation will be accelerated by electrically driven pumps, in order to ensure that the radiators at the extreme points of the system will be practically as hot as those close to the boilers. There will be altogether about 600 radiators, which will be heated from six boilers coupled to large mains, on which the pumps will be fixed. It will thus be possible to work the apparatus with two, three, or more boilers, as may be required, according to the state of the weather, and any boiler may be uncoupled and removed for repairs should this be required without stopping the working of the apparatus. There will be a duplicate system of pumps, which may be worked alternately as required. The hot water supply, which will be provided throughout the buildings, will be by copper-lined duplex cylinders connected to the whole of the boilers, and will have separate pumps for forced circulation, so that immediately a tap is opened there will be a flow of hot water at any point. This will be one of the largest and most complete private installations in England.

A Large Ventilator.

What is claimed to be the largest ventilator and elbow in the world is to be found, as one would expect, in the United States, at the Hotel Raleigh, Washington, where the heating and ventilating system has recently been remodelled. The

building occupies a site 90 ft. by 120 ft., and comprises eight storeys. At various points the flues run for the entire height, and on the top floor they are connected to horizontal ducts leading to the fan chamber and ventilating outlet. Although No. 16 gauge galvanised iron was used, it was necessary to reinforce the long stretches across some of the larger ducts (which are 38 in. to 60 in. in width), with angle iron and other means. The ventilator itself is 14 ft. in diameter, and weighs $1\frac{1}{4}$ tons. The elbow is 8 ft. 5 in. in diameter, and weighs considerably over half a ton.

SOCIETIES AND INSTITUTIONS.

Bristol Society of Architects.

The second monthly sketching expedition in connection with the Bristol Society of Architects took place on June 22nd. Whitchurch was first visited, and after the church had been inspected, an hour was allowed for sketching and measuring. The church, which was originally cruciform in plan, contains many points worthy of study. The central tower, carried upon Norman arches, is a feature rarely seen in Somerset, and the early fourteenth century windows in the north transept and chancel are excellent examples of the period. Upon leaving Whitchurch the members went to Publow, where they were received at the church by the vicar, the Rev. H. J. Ker-Thompson, M.A., who gave an interesting description of the building and an account of the restoration work accomplished and still in progress. The glory of Publow is the fine fifteenth-century tower, with its excellent masonry of squared and tooled limestone. The south porch also calls for attention, and in addition there are one or two architectural and archaeological problems calculated to produce discussion. By the kindness of the vicar and Miss-Thompson the members were offered afternoon tea. On the return journey a halt was made at Pensford, where there is a very fine specimen of an eighteenth-century mahogany communion-table.

Institution of Heating and Ventilating Engineers.

The summer meeting of the Institution of Heating and Ventilating Engineers was held on June 25th at Southport, under the presidency of Mr. C. R. Honiball, Liverpool. Mr. A. H. Barker, B.Sc., B.A., London University, contributed a paper on the conditions of guarantee, in which he suggested that engineers should refuse to give a guarantee of any sort which implied a guarantee of clients' houses or other buildings. A paper by Mr. Chas. Knuth, jun., of Budapest, was submitted on the determination of pipe sizes in hot water heating systems. An appeal on behalf of a fund for the establishment of two research scholarships was made.

London Association of Master Decorators.

A meeting of the General Committee of this Association was held at 92, Queen Victoria Street, E.C., on June 10th, Mr. C. E. Wilkinson in the chair.

The Secretary reported that he had received a total of twenty replies to the enquiry addressed to members on the subject of the L.C.C. Education Report, all of which were favourable to the scheme. Each of the twenty expressed their willingness to take one or more boys at the specified rate of wage.—Mr. Campbell said it was a question whether the men would agree to the scheme. He very much doubted whether they would allow a firm

to take on two or three boys per annum.—The Chairman said the opinion of the members was practically unanimous so far as the twenty replies received were concerned, but could those twenty replies be said to represent the opinion of the Association at the moment?—Mr. Anderson suggested deferring the matter until the general meeting, the secretary to send, with the notice of the general meeting, a letter asking for further replies, which would be treated as confidential. Agreed.

The report prepared for presentation at the annual general meeting was agreed to, subject to certain slight revisions and editing.

Mr. Milton drew attention to the notice of a meeting to be held the following day at which a representative of the Board of Trade was to deliver an address "explanatory of the provisions of the Act," and suggested that the matter of workmen's employment cards should be deferred until it was seen what the Government proposed to do in the matter.—It was agreed to defer the matter in accordance with Mr. Milton's suggestion.

With reference to the Insurance Act, Mr. Anderson said that the sooner it was recognised by quantity surveyors that the amount to be paid on insurance unemployment should be added to prices generally, the better.—Mr. Webb said the difficulty would be got over if a provision was made in the bill of quantities that the contractor could add what he felt disposed to put, so long as it was recognised by the quantity surveyor.—Mr. De Jong asked whether the master builders would not take the matter up.—Mr. Anderson said it affected the master builders more than it did decorators, and no doubt they would deal with it.—Mr. Rowden thought it would be well to send the letter of the Master Plumbers to the Master Builders' Association suggesting the adoption of the recommendation.—Mr. Anderson suggested that a letter from the Association should be written on similar lines, and sent to the master builders, asking what they proposed to do in the matter, and also for an expression of opinion. Agreed.

Messrs. Anderson, Wilkinson, Honeychurch, and Milton reported that, as requested, they attended at the Home Office, and experienced a long examination with reference to the continued use under regulations and the prohibition of white lead, all of which will be reported in due course.

COMPETITION DESIGNS FOR MURAL DECORATION.

The Committee of the Exhibition of Designs for Mural Painting and for the Decoration of Schools, etc., which is being held at Crosby Hall, Chelsea, announce the following results of competitions: Gallery of Modern Art, Dublin—Mr. Walter Bayes, Mr. F. Cayley Robinson, and Mr. James Mark Willcox. Middlesex Hospital—A prize of £50 is awarded to Donald MacLaren. Commercial Street L.C.C. School—Miss Louise Jacobs. Cable Street L.C.C. School—Mr. Stanley H. North. Design for school banners, the prize divided between Miss Gwynedd M. Hudson and Miss Eleanor Pallett. The results of other competitions will be announced shortly. In these competitions Sir Hugh Lane, hon. Director of the Gallery of Modern Art, Dublin, offered £100 each for the execution of three panels from designs to be approved by him. The panels, which will measure 8 ft. square, are intended to decorate the projected new building for the Dublin Gallery.

OBITER DICTA.

The Perfect House.

The house one really wants, the vision of the perfect home, exists only in the heart and mind of the hunter, and has not been materialised in bricks and mortar. Or if it does exist, someone has a nine hundred and ninety-nine years lease on it.—George Edgar in the "Daily News."

London Parks and Streets.

A week or so ago I said that Londoners deserved to have fine parks—they treated them so well. I must now add that they do not deserve to have fine streets—they treat them so badly.—"The World."

The Fault of English Wall-Painting.

The fault in most wall-painting in England is realism, that is, the realism of the easel picture, which is intended to be seen in a small place. It is gratifying to note any effort that may lead to a real and lasting movement in decorative art in England. Art in England is sore in need of some fresh impulse, and the lack of design is the chief weakness in British pictorial and mural painting.—"Morning Post."

In Praise of New York.

M. Cormon, who has just returned to Paris from New York, has been greatly struck by the beauty of the latter city. The skyscrapers, he contends, are ignorantly criticised by those who have not seen them in their ensemble. These buildings, seen at night, amidst the millions of points of light that illuminate the immense city, dominate a scene of fairy-like splendour.—"Le Bâtiment."

"Punch" on Pisa.

Among the inhabitants of Pisa there is a very strong feeling that something must be done for the preservation of its greatest architectural curiosity. It is recognised that if they are still to preserve their Leaning Tower it must be taken to pieces and re-erected in the strict perpendicular.—"Punch."

The True Spirit of Criticism.

Year after year he had listened to people coming away from the greatest exhibition of art in the United Kingdom, that of the Royal Academy, with terms of nothing but complaint and condemnation on their lips. Too many of them declared that it was a wretched exhibition, that there was hardly anything worth looking at, or that it was a wretched set of daubs. Such people were devoid of any sense of technical knowledge or experience, but they thought they were exercising their critical faculty. There was no greater mistake than to suppose that criticism consisted merely in fault-finding. The true spirit in which to go to an exhibition of art was to be eager to find something to commend and to avoid anything to condemn.—Sir Herbert Maxwell, at the opening of the Whitechapel Exhibition.

Imaginary London.

The idealist might think that Regent Street should have had an upper pathway at the first-floor level, like the old Chester Rows, and thus provide two rows of shops in place of one. The Mall roadway might surely be as pleasant as the Unter den Linden in Berlin, and the public allowed to sit under the shade of trees and rest. We wonder if there is ever to be a great southern embankment to the Thames, or if it is always to remain an alternating stretch of cathedrals, wharves, railway stations, County Hall, and hospitals, without unity and beauty of effect. May we

have flowers on our lamp-posts, less dangerous crossings of streets, covered footways to our bridges, and scores of other things which are possible to a city which is an Empire in itself? They must indeed be destitute of imagination who cannot be affected by the thought of what is possible to beautify, to dignify, and to transform London so that it should become a magnificent and perfectly governed city.—T. Raffles Davison on "London as It Is and As It Might Be," before the London Society.

The Value of Fire-Fighting Devices.

A moment's consideration will show that while there is a certain benefit in carrying on business in a fireproof structure, the fire-resisting nature of the building itself is but one thing the business man must take into consideration. It is more important to the tenant that a fire should be quickly checked than that the building occupied should not be seriously damaged if part of its contents burn up. It is poor policy to rely wholly on insurance as a protection against fire losses. It is unbusinesslike because it is needlessly expensive. The cost of insurance is made unnecessarily high through the lack of methods of checking incipient fires in almost every insured structure in the country. Moreover, the loss of business suffered on the occasion of a fire is something that no insurance covers. These things are mentioned because the architect is frequently called upon to pass upon the advisability of installing such automatic fire-fighting devices as fireproof doors and sprinkler systems. Prevention is always much better than cure, and apparatus of this sort is a well-tried preventive of serious damage. All business men wish to reduce the cost of their insurance, and there is no better way of doing this than by installing those devices which check the spread of a fire. Fireproof construction is by no means the whole story in the prevention of losses through fire.—"Engineering Record."

Street Subways.

A man who tries to take a bee-line from the Charing Cross end of the Strand to the entrance of the Admiralty Arch will only do so at considerable risk to life and limb. The wise, the wary, and the timid seek such refuges as there are, but there are certainly not enough. The obvious remedy might seem to be to provide an adequate system of subways at places such as we have indicated. So it would be, no doubt, if when such subways are provided, as they are, for example, at the Mansion House, or at the northern end of Blackfriars Bridge, pedestrians could be induced to use them to such an extent as would justify the expenditure entailed. But, so far as our observation extends, they are used much more sparingly than might be expected. Unless, in addition to being a thoroughfare, they are also an avenue to some underground railway station, there is seldom any such stream of traffic through them as flows incessantly in the streets above, and often they are deserted solitudes in which a whimsical philosopher might meditate at his ease on the perversity of human nature, or a municipal economist might moralise on the vanity and vagaries of public expenditure. We have no other remedy to suggest, however. If people will not use such subways as exist to such an extent as to justify their existence, we are not likely to get more of them. The timid and the infirm must take their chance as they do at present, and bear the trial to their nerves with as much philosophy as they can command.—"Times" Leading Article.

BRADMORE HOUSE, HAMMERSMITH.

The south portion of this house was formerly the residence of Edmund Sheffield, Earl of Mulgrave and Baron of Butterwick, who died in 1646. In a conveyance dated 1666 it is called the Manor House and Farm of Butterwick. In the year 1700 it passed into the hands of Henry Ferne, Receiver-General of Customs, who added some apartments on the north side of the house, intended, it is said, for the residence of Mrs. Oldfield, the celebrated actress. The mansion be-

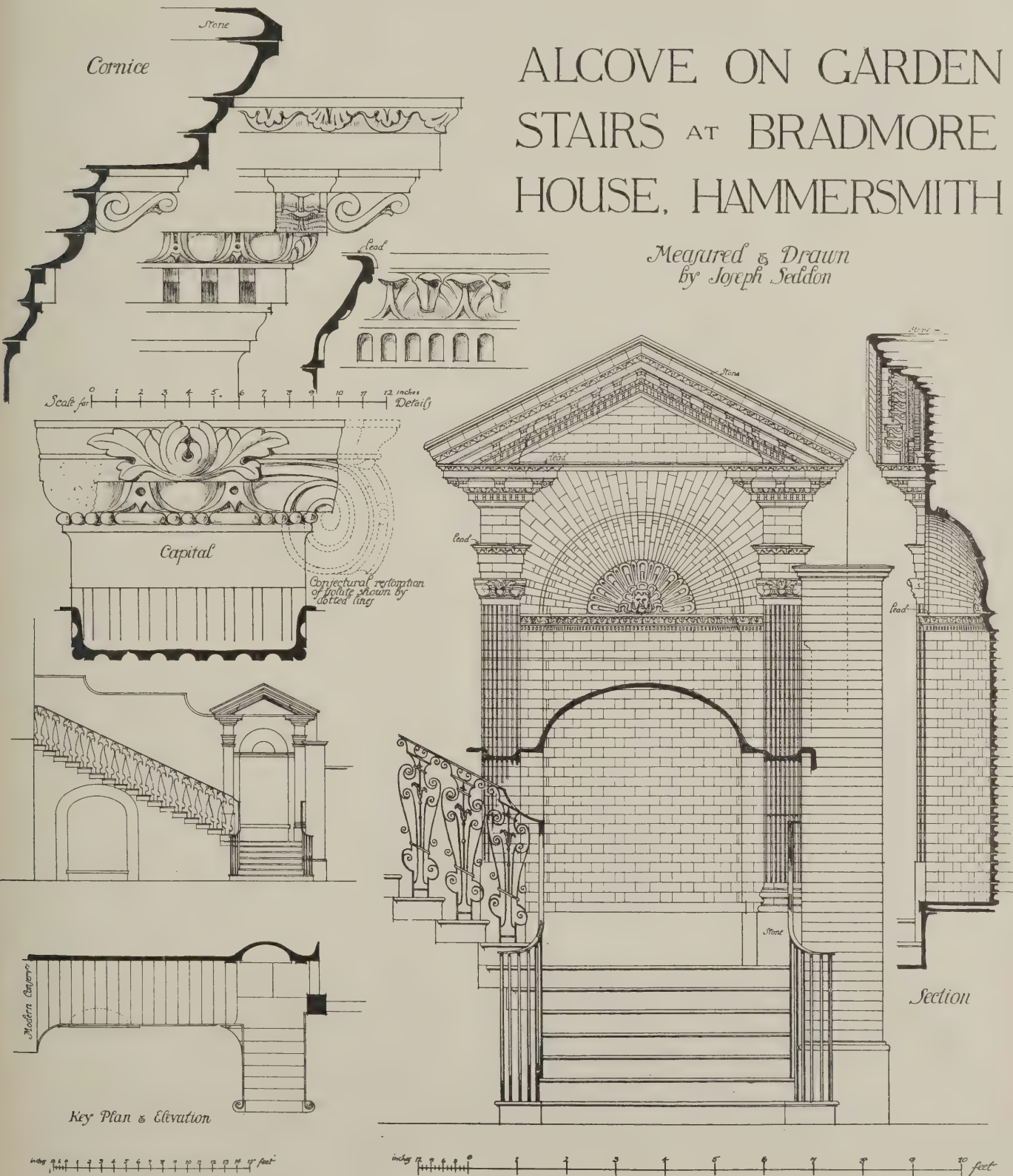
came the property of Sir Elijah Impey's family in 1736, and was subsequently divided into two houses, the northern part being called Bradmore House.

It is this northern part, erected in 1700, which is of chief architectural interest. Its exterior, facing the garden, is of well-executed brickwork, with a curious arrangement of Doric and Corinthian pilasters in stone, and a Doric entablature ramped up to a higher level over the centre portion.

The approach from the garden to the principal rooms is by an external flight of

stone steps, with wrought-iron balustrade. On the first landing is an alcove in rubbed and carved brickwork of excellent workmanship, and with more refined detail than is noticeable in the rest of the house. Only a small portion of one volute remains to the Ionic capitals of this alcove, but otherwise it is in a good state of preservation.

The first floor rooms have the mantelpieces, panelling, and carved cornices of the period. The carton-pierre enrichments to some of the panelling appear to have been added at a later date.



INTERNATIONAL FIRE CONGRESS AT
ST. PETERSBURG.

The International Fire Congress, which opened at St. Petersburg on June 2nd and was continued at Moscow and Warsaw, saw its conclusion on Sunday, June 9th. It was held at the invitation of the Imperial Russian Fire Service Society, and conducted under the auspices of the International Fire Service Council. There were some 1,200 members of Congress, of whom about 200 were non-Russian, including six British delegates, among whom was the Earl of Lonsborough, K.C.V.O.

The Congress was divided into four sections: (1) Fire Prevention; (2) Fire Service; (3) Ambulance; (4) Fire Insurance. Some eighty papers were put forward for discussion, including one on fire protection at exhibitions, by Mr. Edwin O. Sachs, F.R.S.Ed. (chairman of the British Fire Prevention Committee); one on fire testing stations and research work by Mr. Horace S. Folker, F.A.I., and one on the importance of fire brigade associations by Mr. T. G. Dyson, vice-president of the National Fire Brigades Union.

Notable Continental papers were those presented by Chief Officer Reichel (Berlin) on motor fire appliances, Chief Officer Westphalen (Hamburg) on the storage of Petroleum, by M. Guesnet (Paris) on fire prevention, by Mr. Czermack (Austria) on fire service museums, by Dr. Prange (Berlin) on industrial fire prevention. About twenty of the more important papers will be published in three languages by the International Fire Service Council in their next Bulletin.

The Congress was opened by the Grand-Duke Andrew, who attended a number of the meetings and also the social functions of the Congress. The Executive work of the International Fire Service Council was conducted by Chief Officer Meier, of Amsterdam, the president, and Mr. Sachs, vice-president, the latter occupying the chair in the fire preventive section.

The Russian Reception Committee was under the chairmanship of Prince Lvoff, president of the Russian Fire Service Society; Count Suzor, City Architect of St. Petersburg; M. Borodine, and Chief Officer Litvinoff, St. Petersburg Fire Brigade.

The occasion of the Congress was taken for the arrangement of a fire brigade display on the Champs de Mars, St. Petersburg, in which both the professional and the volunteer service participated, and similar displays were given at Moscow and Warsaw.

During the course of the Congress several executive meetings were held by the International Fire Service Council, as also the biennial general meeting, at which Mr. Edwin O. Sachs was re-elected a vice-president, Mr. Horace Folker an executive member, and Mr. Ellis Marsland joint honorary secretary.

The next executive meeting of the International Council will be held in 1913, at Leipzig, and the next International Fire Congress under its auspices will probably take place at Copenhagen in 1915.

The Special Commission formed by the British Fire Prevention Committee to study the fire preventive and fire service arrangements of Russia returned to London last week, after visiting St. Petersburg, Moscow, and Warsaw, and attending the International Fire Congress that has been held in the first-named city.

Many works, warehouses, and large buildings were visited, as also the princi-

pal fire stations, water works, and other municipal institutions. The work of fire prevention is accorded primary importance in Russia owing to the enormous annual fire loss—stated to be £30,000,000—which can be only reduced to any appreciable extent by better building and fire-preventing regulations. Recent mutual fire insurance schemes also make largely in Russia towards systematic fire-preventive measures.

FIRE PREVENTION NOTES.

Risk and Insurance.

The recently issued reports and balance sheets of the great British fire insurance companies all indicate that the year with which they deal—1911—was of rather remarkable character with regard to fires. Although no fire of outstanding magnitude occurred, the number of minor outbreaks was phenomenally large. One company alone states that it was directly interested in some 8,000 more fires than in 1910. The fire funds for 1911 of twenty-one great insurance companies amounted to £37,432,040, and as this shows an increase of £1,451,805 over 1910 it may be inferred that the settlements were light. The steady reduction in the rates of insurance during recent years is, it is acknowledged, a "direct response to improvements in the construction and arrangement of buildings, such as the isolation of portions in which hazardous trades are carried on, and in the provision of mechanical fire-extinguishing apparatus and alarms, all of which factors companies not only recognise readily, when approved, in their rates, but actually recommend, or sometimes even insist upon as a condition of their accepting the business. By legislating in this way the offices perform a public service the extent of which, as a rule, is very little realised."

Limitations of Fireproofing.

This favourable disposition ought to be encouraged: and, knowing of its existence, the architect would be justified in making the most of it. That is to say, he should point out to the client that fire-prevention methods are, on the whole, an excellent investment, benefiting the building owner, the fire insurance companies, and the general public—the first by reductions in premiums, by insuring risks that the companies might not otherwise undertake at any price, and by preventing or minimising the loss by dislocation or suspension of business invariably accompanying a genuine fire (there are, unfortunately, other kinds); the second, by reducing the number and extent of fire claims, and by the greater amount of business secured through the acceptance of buildings that under other conditions would be rejected, and through the increased number of insurances induced by the lowering of rates; the third, in ways that are sufficiently obvious. In course of time we may arrive at a position in which risks and rates are merely nominal; but beyond that it would be foolhardy to go—a truism that would appear to be utterly superfluous were it not for the curious fact that over-zealous advocates of fire-resisting construction occasionally claim that buildings can be rendered so completely immune from fire risk as to render insurance quite unnecessary. The absurdity of this proposition is in no need of demonstration, and it is quite impossible to believe that sensible people are acting on it, although there are assertions to that effect. Insur-

ance companies being so sympathetic towards reduced risks as to meet them with handsome reductions of rates, the minimum risk and the minimum rate bring us as near to idealism as we can expect to get; and the talk about absolute immunity is so transparent an exaggeration as to defeat its object.

Over-confidence in fire-resisting construction is an attitude to be discouraged. It leads to extraordinary recklessness on the part of those who occupy such buildings. Over-confidence in the exaggerated claims that the "Titanic" was unsinkable led, probably, to the loss of many lives that might have been saved, many persons, with too robust a faith in the assurances that the damaged ship could not go down, preferring to remain on it rather than trust themselves to the boats. Similarly, it is reported that the occupants of fire-resisting buildings are very apt to abuse them by abandoning the careful habits that would be instinctively observed in buildings of combustible type. In one respect their confidence is justified. The properly constructed building will not take fire very easily, nor suffer destruction as a result of even the most violent conflagration. There is proof of the latter assertion; but this happens also to be proof—and quite superfluous proof—that fire-resisting construction is only one factor in the larger problem of fire prevention. To recur to an already familiar comparison, it would be as unreasonable to demand that a fire-resisting building prevents conflagration as to expect the same phenomenon from the kitchen grate. The main difference between a fire-resisting building and one of ordinary type is that to the former you cannot possibly set light, either from within or without, nor is the fiercest fire within it likely to result in the complete destruction which is the normal fate of the ordinary type of building. The one is fire-resisting, the other is fire-assisting.

Passive resistance with regard to fires is of immense value and importance. It prevents many an outbreak, and restricts many another by confining it to the apartment in which it originated. But it should be quite obvious that aggressive resistance is necessary for the suppression of an outbreak; and yet innumerable business men seem to overlook this elementary fact, even as they appear to ignore the equally patent and simple principle that the existence of fire-resisting construction certainly does not justify abandonment of all habits of precaution against ignition. No doubt combustible materials must be stored somewhere; and indisputably a fire-resisting building is the best in which to store them; but to stop short at this provision is sheer folly. Quite commonly fire-resisting construction is flouted by filling the building with a rich variety of inflammable materials—varnished woodwork doors, partitions, furniture, and fittings, and flimsy hangings or merchantable fabrics scattered about in a manner that seems expressly to invite ignition; while paper, wood shavings, light packing-cases, the straw with which they are stuffed, and the like, are allowed to assume the appearance of elaborate preparations for sheer arson. Such gross carelessness is quite unnecessary, and is always amenable to method, management, and the consequent discipline of service.

Gross Recklessness.

Gross carelessness, however, is not a legitimate sequence of fire-resisting construction; and on the principle of

bon chat, bon rat, fire-resisting construction should be backed up in every detail.

There is nowadays not the slightest difficulty about getting fire-resisting doors, furniture, and fittings. Everything required in an office may be obtained in metal which is so treated that it does not look coldly metallic. The chance of fire in any office in which such fittings are used is obviously in the highest degree remote. In buildings of the draper's shop and warehouse degree of hazard, many proprietors, perhaps through ignorance of the resources available, appear to regard fire-prevention as hopeless, whereas a little management, and the provision of proper fittings, would reduce the extraordinary risks to an extent that would probably make insurance possible where before it was refused, and would obtain it at much lower rates than those imposed upon extreme risks. As a matter of course, automatic sprinklers should be installed in all buildings in which combustible goods abound. This provision would of itself secure the confidence of the insurance companies, and soften their rates, besides relieving the proprietor from the wearing anxiety from which he is seldom free when he knows that he has made no adequate provision against calamity from fire. We well remember the sigh of satisfaction with which a proprietor turned to us, on the completion of an installation of sprinklers, with the exclamation, "There! These will take care of the premises when I am in bed. No more sleepless nights!" Not many months afterwards, the outbreak and prompt suppression of a fire at his factory proved conclusively that his confidence was not misplaced. Fires under automatic sprinklers, according to Mr. Franklin H. Wentworth, secretary of the National Fire Protection Association, have occurred in more than 11,000 cases of which the association has records during the past fifteen years. In all these cases, he said, there was not a single instance where the automatic sprinkler, when of standard approved make and installation, had failed to put out or hold in check a fire under it, except where the system had been tampered with or crippled by an explosion.

A NEW TYPE OF FIRE EXTINGUISHER.

The Abbé Daney fire extinguisher, which is reported on by the British Fire Prevention Committee in its Report No. 165, is shown to comprise an appliance of somewhat different type from what has generally been put forward under the class of fire extinguishers. The report shows that the Committee's usual series of tests for extinguishers was applied, as also part of their series for extinguishers intended to deal with petrol tests, and the report says that the test demonstrated that the extinguisher when brought into action and properly handled was efficient in checking small fires in their early stages. Upon petrol vapour it was effective where the surface was not too large. Upon celluloid it was especially effective. The report further states that where the material ignited was soft and loose, the flames could be kept in check and virtually extinguished. The tests with the extinguisher here reported upon were undertaken

by a special sub-committee, of which Mr. Ellis Marsland, district surveyor, was directing member, and upon which there were serving a fire brigade officer, an insurance surveyor, a mechanical engineer, and an insurance expert, whilst there was a large attendance of members and subscribers, including representatives of various Government and municipal departments.

FIRE LOSSES ABROAD.

Fire losses in the United States and Canada during May last aggregated \$21,013,950 (£4,202,790) or somewhat less than those of May, 1911, which totalled \$21,422,000 (£4,284,400), but over \$2,000,000 (£400,000) larger than the total for the corresponding month of 1910. There were no fewer than 282 fires during May of the present year, each of which caused an estimated loss of \$10,000 or more.

The more important fires during May, 1912, were:—

Croghan, N.Y., business portion of town	\$450,000
Cleveland, O., oil barges and wharves	450,000
Providence, R.I., rubber warehouse	575,000
Savannah, Ga., wharf sheds	460,000
Houston, Tex., several business houses	625,000
Flint, Mich., deaf and dumb school	600,000
Schenley Pa., whisky warehouse	800,000
Keasbey, N. J., brick works and asphalt plant	940,000
Moose Jaw, Sask., electric power plant	500,000
Telluride, Col., stamp mill	500,000

The record for May affords no encouragement to fire insurance interests; on the contrary, it makes it even more apparent than heretofore that the current year thus far has been so serious from a fire loss standpoint that, as the "Journal of Commerce" remarks, unless underwriters are very fortunate for the balance of the year they will sustain a loss on the 1912 operations.

Recent advices from Australia indicate that there has been continuance of the epidemic of fires, and below are given particulars of some of the principal outbreaks that occurred during March and April.

In Victoria a fire occurred on March 16th at Messrs. G. Hirst and Co.'s woollen mills, Geelong, involving a loss of £16,240, and on March 21st a fire at a general store, Drouin, cost £3,150. In New South Wales on April 18th a fire at a general store, hotel, etc., at Ganmain represented a loss of £13,760. A very large number of fires have taken place in the country districts, amongst them being the following: April 2nd.—Michael and Co.'s premises at Tamworth were burnt down, the water supply being low at the time. It is stated that the stock was insured for £2,200. April 3rd.—C. Molony's store at Collarenebri was burned, involving a loss of £800. April 8th.—At Leura, on the Blue Mountains, a large dwelling, occupied by Mr. G. Bartlett, was completely destroyed. April 8th.—At West Wyalong the Manchester Unity Oddfellows' Hall, Turner's Royal Hotel, and a private dwelling were destroyed. April 10th.—At Newcastle a two-storey stationer's shop was burnt out, and the adjoining buildings suffered considerably. The insurance was £3,000 on stock. April 11th.—At Dunoon the Bank

of New South Wales, a boarding house, and a shop were all destroyed.

Insurance companies in South Australia have had to face an unusual number of small losses during the last few months, serious recent outbreaks being those at the Chaff Mills at Hamley Bridge and Crystal Brook, each fire causing damage to the extent of about £1,000. On April 2nd a fire broke out in a warehouse belonging to Messrs. W. and T. Rhodes, but happily it was suppressed by the brigade at an early stage, or a sweeping fire might have ensued. As it was the loss was about £1,500.

The number of buildings destroyed by the great fire that broke out in Constantinople on June 3rd is happily less than was at first reported. The official report fixes the total number at 1,247. It is hoped that the estimates of the losses caused by the fire are also exaggerated. The damage done and the distress caused are nevertheless very serious, and the fact that this is the fourth extensive fire which has taken place in Stambul since the grant of a Constitution, and that the quarters destroyed by the three previous fires are still in ruins, has caused much comment, which, however, in a sluggish country like Turkey, is but little likely to lead to the immediate adoption of efficient means of fire prevention.

TRADE AND CRAFT.

Ozonair Portable Apparatus.

We have received from Messrs. Ozonair, Ltd., 96, Victoria Street, Westminster, S.W., a copy of the new edition of their catalogue No. 1, "Ozonair Apparatus for General Purposes." This catalogue contains illustrations, prices, and other particulars of Ozonair portable generators for purifying the air in rooms of from 3,000 to 12,000 cubic feet capacity. They connect to supply circuits or to portable accumulators. These apparatus are made in a variety of patterns, for standing on the table (horizontal or vertical current of ozonised air); for fixing on the wall; with medical fittings, etc. They are of handsome and compact design, and the consumption varies from only 10 watts to 130 watts, so that in all cases, where intended for use on a supply circuit, they can be connected to any lampholder or plug. The makers claim that their Ozonair apparatus, as compared with other methods of producing ozone, are noiseless and generate pure ozone free from the oxides of nitrogen. We can give personal testimony to the refreshing and invigorating effect of Ozonair on the occupants of an office apartment, upon whom it exercises a most beneficial mental, moral, and physical effect—precisely the opposite, that is, from that feeling of languor, lassitude, and discomfort which is well known to result from a stuffy atmosphere. The catalogue also contains some very interesting information regarding the nature of ozone and the many public and industrial purposes to which Ozonair apparatus can be applied, such as ventilation, water and food sterilising, brewing, bleaching, deodorising, etc. That these are not hypothetical is proved by a list of important users, not only in Great Britain but on the Continent and in other parts of the world, comprising public buildings, breweries, slaughter-houses, cold storage, waterworks, laboratories, and so on. It is understood that Messrs. Ozonair, Ltd., will be pleased to send a copy of the catalogue to all those who are interested in the subject.

IN PARLIAMENT.

*(By Our Press Gallery Representative.)**Regent Street and Other Amenities.*

In the Committee of Supply of the House of Commons, Mr. Fell asked for information as to the intentions of the Government regarding structural alterations in Regent Street, and especially the Quadrant. Regent Street, he said, had been described as the finest shopping street in existence, therefore very great care should be exercised in making drastic changes in its architecture or doing anything which might interfere with its usefulness. Authorities said it was exactly of the right proportions for a perfect street, and that the shops and houses were exactly of the right height. It combined the qualities of lightness and good proportions better than any street in any other capital. One part of Regent Street had been rebuilt for the Piccadilly Hotel. The building itself was splendid, but it was unsuitable for a shopping street, the big stone piers obscuring the shop windows. He wanted an assurance that if the street was rebuilt it would not be in the style of the hotel.

Mr. Bathurst referred to the careful and considerate way in which the Office of Woods and Forests had treated Tintern Abbey, but objected to the untimely season at which the improvements were carried out. During the whole of last autumn, when thousands of people from all parts of the world were visiting Tintern Abbey, the most beautiful feature of the whole ruin, the west window, was so concealed as to render it impossible to see its exceptionally beautiful tracery. He hoped the unfortunate method of marking every new stone incorporated in the building with large figures with the date of its incorporation would be modified in order to preserve the amenities of the building.

Mr. Boyton urged the Office of Woods and Forests to consider seriously the many petitions they had received with regard to the rebuilding of Regent Street. He suggested that a special committee should be appointed, and that designs should be invited from outside sources.

Mr. Newton said that in Regent Street the shopkeepers wanted as broad an expanse of plate glass as possible and as small-sized columns as were compatible with carrying the superstructure.

Mr. Cassel raised the question of building the Bedford College for Women in Regent's Park.

Mr. Runciman, in reply, said the problem of Regent Street was by no means a new one. The Commissioners of Woods and Forests had no desire to erect buildings which would make retail trade impossible, but at the same time they had to consider the beauty of the street. In 1904 the question of new designs for Regent Street was remitted to a small committee, and on the recommendation of that committee Mr. Norman Shaw was selected to design the large building which was to be the first instalment of the new Quadrant. That new building had been erected, and had been subjected to a good deal of criticism, although the opinions had not been all on one side. He did not think it was desirable that the whole of this vast Crown property should be erected on a design which was likely to bring about general displeasure. He suggested that a good way out of the difficulty would be that Parliament should approve of the Commissioners of Woods and Forests making use of a small committee, consisting of those who had an eye to the ameni-

ties of Regent Street, and that the committee should consult once more with the tradesmen who would be occupying the new buildings. Before any change was made in regard to the designs in Regent Street he would undertake to announce it to the House. He would consider whether one or more tradesmen should be put upon the committee. With regard to the erection of the Bedford College in Regent's Park, he said the object of the Crown in letting the land to the College was to provide a site for one of the best institutions in London, and to do it in such a way as would not tend to destroy the amenities of the park. He would be sorry to see Regent's Park, or any other park, utilised for the erection of public institutions. There would be no alienation of any park lands in future without the House having an opportunity of expressing an opinion on the matter. With regard to Tintern Abbey, he assured the House that the Department would do all in their power to preserve its beauty.

Lord Balcarras regarded the appointment of a Departmental Committee to consider the extension of an existing block of buildings in Regent Street as a not very hopeful way of proceeding. Influences might operate in such a case to wreck the unity of design. He suggested that Mr. Runciman should boldly choose an architect of accepted status and reputation and place the work in his hands, making him responsible.

Mr. Runciman observed that that was what had happened in regard to the Quadrant, and they saw the result to-day.

Lord Balcarras said that was not so. Mr. Norman Shaw was not responsible for the building. He had retired when the task was given him. The design was submitted to him as assessor, and he said he considered it the best that had been produced. Any design made by a man of Mr. Norman Shaw's standing was far more likely not only to meet the requirements of prospective tenants, but to receive the sanction of public opinion.

Later in the debate Mr. Runciman said he had refreshed his memory, and found that Mr. Norman Shaw prepared the Quadrant design himself and exhibited it at the Royal Academy over his own name.

Lord Alexander Thynne was not satisfied with the assurance as to Regent Street. It seemed an amazing blunder to increase the height of the buildings in Regent Street. Nash and the other expert architects who originally calculated the height of the buildings did so in reference to the width of the street. The part of Regent Street which had been rebuilt presented a very striking architectural feature, and he wanted to know whether it was proposed that this should be left and the rest of the Quadrant rebuilt in a wholly different style. He would like to see a permanent committee appointed to deal with the architectural development of London similar to the committee which had done such good work in Paris.

The subject then dropped.

Government Buildings at Delhi.

Mr. Montagu, replying to Captain Murray, stated that the Secretary of State had learned from the Viceroy that the expert advisers of the Government of India were of opinion that the Coronation Durbar site did not altogether meet the requirements of a new capital, and thought that a better site could probably be found to the south-west of Delhi, where there was rising ground of the same character as the "Ridge" to the north of the city. This area was being provisionally con-

sidered, but no final decision would be taken until after the rainy season. The town-planning experts who were submitting a preliminary report would shortly return to this country, but would revisit India in the winter.

Office of Works Contracts.

Mr. Pointer asked Mr. Wedgwood Benn, as representing the First Commissioner of Works, if he could state approximately the amount of work given out to contract by the Department and the amount done by direct labour; what were the general grounds which determined the policy of the Department as to whether a particular piece of work should be done by contract or by direct labour; and whether the regular repair work in the various Government buildings was done by contract or otherwise.

Mr. Wedgwood Benn said the policy of the Department was to have work executed under contract. Practically the only direct labour employed was in connection with the Royal Parks and certain ancient monuments situated in remote places. The regular repair work in the various Government buildings was executed under the maintenance contracts.

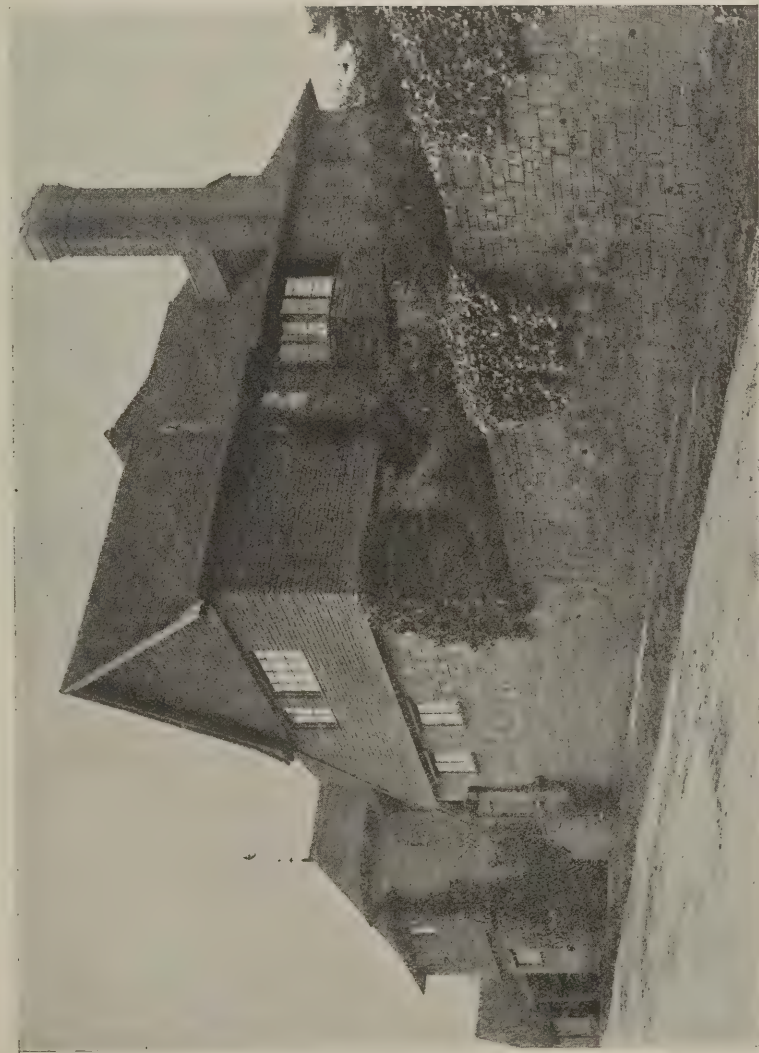
Illumination Standards.

Mr. Watt asked the Secretary of State for the Home Department, whether it was his intention to appoint a committee to inquire into the question of illumination standards; if so, would he say when it was to be appointed; of how many it would consist; and whether he would see that a Scottish representative would be put on it.

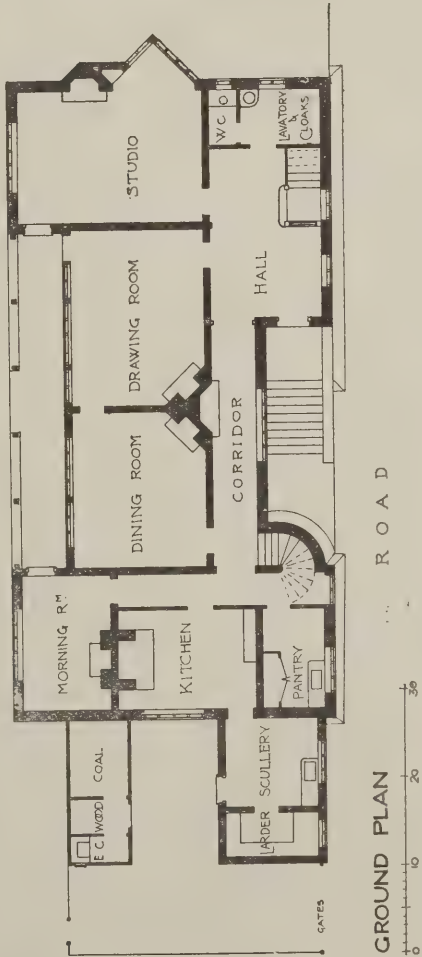
Mr. Ellis Griffith, who replied, said it was the intention to appoint a committee, and its constitution was now under consideration. The committee would be a committee of experts, and questions of the representation of particular parts of the country or particular industries would not arise.

A NEW JETTY FOR CALAIS.

Works are now in progress at Calais for constructing a new jetty in the place of the old western jetty, the rebuilding of which has become necessary not only because it has fallen into disrepair, but also because its foundations have been weakened by the dredging required to maintain a minimum mooring depth of 5m. for the mail boats between France and England. According to the plans the old jetty will be demolished and replaced by a new one, 327m. long, built in masonry. The new structure has been planned in such a direction that after it is completed the entrance to the port of Calais will be constituted by two converging moles, this disposition being intended to facilitate the entrance of vessels in rough weather and to improve the maintenance of the channel, at the end of which a breakwater is to be constructed to destroy the swell in the interior of the channel. The present width between the heads will be maintained at 130m., but the head of the new jetty will be about 20m. further back than the present head, in order to improve the access to the port in north-east winds, the only ones from which Calais suffers. The new jetty is to be similar to the existing one, which was constructed in 1892-6. It consists of a half-solid jetty founded on caissons sunk by compressed air, and an interesting feature of the design is that the solid masonry is to be surmounted by a grate framework built in reinforced concrete.



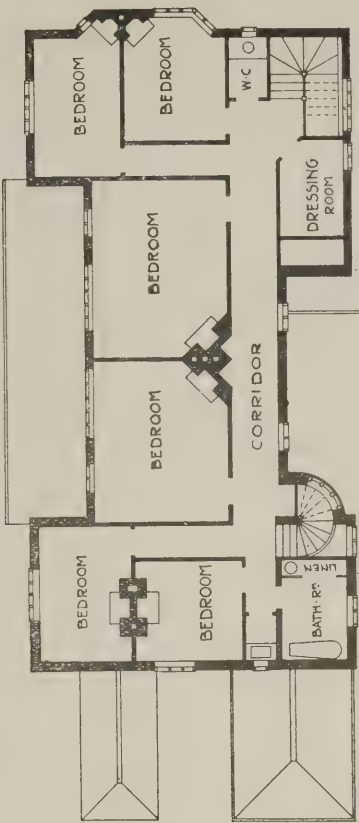
View from Road.



GROUND PLAN



Entrance Hall and Staircase.



"BROAD DENE," HASLEMERE. W. F. UNSWORTH, F.R.I.B.A. (UNSWORTH, SON, AND TRIGGS), ARCHITECT.
(For particulars see next page.)

"BROAD DENE," HASLEMERE.

This house has been erected for Mr. Walter Tyndale, and occupies a site on the crest of a hill above Haslemere. It is built of stone for the ground-floor storey, with tile-hanging above. The entrance front is recessed in the centre, and is enlivened by a turret projection enclosing the secondary stairs. Access to the main entrance is gained by a flight of steps, the landing of which is covered by a pent roof. The hall forms a small square, and is connected by a corridor with the servants' quarters. Leading off the hall and corridor are the three chief rooms on the ground floor—the dining-room, the drawing-room, and the studio. On the garden front is a loggia, very pleasantly arranged, with roof supports on a dwarf wall, the whole treatment being very quiet and refined. The architect was Mr. W. F. Unsworth, F.R.I.B.A. (of Messrs. Unsworth, Son, and Triggs, Petersfield). The builders were Messrs. F. Milton and Sons, of Witley, Surrey.

FIRE TESTS WITH GLASS.

The British Fire Prevention Committee has just issued Report No. 166, dealing with fire-resisting glazing which was subjected to a test. The glazing put forward (known as "Copperlite") resisted the test required for classification in Class A, involving a test of $1\frac{1}{2}$ hours' duration from fire at temperatures up to 1,750 Fahr., followed by the application of water from a steam fire-engine for two minutes. The result is therefore in the highest degree satisfactory, the classification showing that the glass was extraordinarily successful.

It should be remembered that in fire-resisting glazing architects and property owners have a valuable ally if it be properly applied, for risk of fire could thereby be limited and the exposure hazard from external fire reduced. The report dealt with in Red Book No. 166 relates to tests that were undertaken before representatives of the committee, including Sir Henry Tanner, of H.M. Office of Works, and Major Cooper Key, of the Home Office, both representing the Committee's Council, and under a sub-committee directed by Mr. Ellis Marsland, District Surveyor, and including an insurance surveyor, a district surveyor, a mechanical engineer, and three fire-brigade officers.

YORKSHIRE BUILDERS' FEDERATION AND THE INSURANCE ACT.

At a meeting of the Yorkshire Federation of Building Trades Employers in Sheffield, on June 20th, fifty-seven representatives of the affiliated associations throughout Yorkshire attended. Mr. J. Townsley, of Hull, president, was in the chair.

Mr. H. Smith, the divisional officer of the Board of Trade, explained the provisional conditions on which it was likely that the Board of Trade would be able to enter into an agreement with employers under the provisions of Section 99 of the National Insurance Act.

It was suggested that a charge might be made by the Labour Exchanges if they undertook on behalf of the employer the custody and stamping of workmen's contribution books in respect of both parts of the Act.

A discussion ensued, and several members drew attention to various points in

which it was almost impossible to reconcile the suggested procedure with the actual working customs which prevailed in the building trade.

The following resolution was passed:—

"That in the absence of reliable official information by the Board of Trade, this Federation strongly recommends members not to enter at present into arrangements with the Labour Exchanges for undertaking any of the duties of employers in respect of contribution cards, but to do such work in their offices and by their own staff."

Attention was drawn to the ruling that an employer's son would be subject to the same regulations as a workman in respect of contributions under both parts of the Act, and would be required to be registered at the Labour Exchange, and there to present his card in the same way as an ordinary workman. This was strongly resented as being an indignity to an employer's son, as it would be likely to put him in a false position as regarded his future. It would be most improbable that an employer's son would be subject to unemployment so long as his father remained in business.

It was reported that the Umpire had decided that the work of repairs usually done by urban district councils did not come within the provisions of the unemployment portions of the Act. Delegates urged that this would inflict hardship upon contractors doing this work as against local authorities performing it themselves directly.

A committee was appointed to prepare a case for presentation before the Industrial Council with respect to the observance of industrial agreements.

METHODS OF WATER-SOFTENING.

The first attempts to soften water on a scientific basis appear to have been made about seventy years ago by Professor Clark, after whom the well-known "Clark's process" is named. The Professor patented his process in 1840, the basis of it being the addition of lime water. This, however, removed only the temporary hardness, and it is, of course, the permanent hardness which is of the more importance, as being the more harmful. This had to be removed independently by the addition of soda. Since Clark's time his plan has undergone many modifications and improvements, while remaining in essence the same; but until quite recently the cost of plants for adding lime and soda, simple though the principle appears to be, has been almost prohibitive. The stumbling-block, writes Mr. F. P. Carroll in the "Hospital," has been the difficulty of diffusing the softening agent in its right proportions throughout the mass of the water, while the necessity for very large tanks in which the precipitation might take place has added very much to the cost of the outfits. There are, indeed, some types of water softener which claim to obviate the necessity for chemicals, the method used being by boiling the water; but these are just as expensive as the others, and they remove only the temporary hardness, being obliged to have recourse to chemicals to remove the sulphates.

So far as boiler-feed water is concerned, there are, of course, many methods of dealing with the precipitates after the hard water has been run into the boiler, and of thus circumventing the necessity for a softener. On the familiar analogy of

a marble in the domestic kettle, these methods include the placing in the boiler of wires, chains, brushes, twigs, fibres, peat, bran, potato-pulp, sea-weed, starch, chestnuts, bacon, and treacle; while there are a large number of proprietary compounds with which to paint the inside of the boiler, these having the effect, not of preventing the incrustation, but of softening it, and thus making it easier to remove. These methods have a certain amount of success, but the labour and expense attaching to them are somewhat considerable, and the accumulation of foreign matter in the boiler is very undesirable. Moreover, such methods do not touch the question of water supply for laundries and domestic purposes. An adequate softening plant is, therefore, the only scientific solution of the problem, and so long as the initial outlay is not too high, it is the only one possible from the double standpoint of economy and efficiency. The addition of lime and soda forms the basis of nearly all the various types of water-softening apparatus.

On the question as to what degree of hardness is desirable in a water opinions differ; the general opinion being that the lower the hardness of water for laundry purposes the better, while water for boiler-feed should retain some 2 or 3 deg. as a safeguard against the corrosion of the internal fittings.

THE GOUPIL GALLERY.

The summer exhibition at this gallery contains a good many interesting works; among them a fine life-size nude of "Diana," ascribed to "Matthew Maris and Bellanger"; an unusual style of picture to be connected with the name of Matthew Maris. Mr. Wilson Steer's "Deserted Quarry" has more coherence as a landscape than is usual with him. There are two fine small landscapes by M. José Weiss; and Mr. Homer Watson's landscapes, in spite of a rather strange style, have a certain power of effect about them. Among other things worth note are Mr. W. Nicholson's two very fine "still life" studies; a work of the same school by the great French artist Vollon; and a night interior, "By the Window," by that gifted and rather wayward artist, Mr. Orpen, who seems to have a new style every time one comes across him.

In the upstairs room is a collection of Canadian landscapes by a Toronto artist, Mr. Archibald Browne. These are not without interest, but, like a good many Colonial artists, Mr. Browne seems to succeed best in reproducing one special effect. In this case it is the effect of twilight on lake and coast scenes; the pictures of this class are not ineffective, but they are rather repetitions of one another.

A Travelling Statue.

Preparations are being made for the removal, for the third time at least, of Grinling Gibbons's statue of King James II., which now stands at the rear of the new Admiralty buildings, immediately facing the Mall. The statue was originally set up in 1686, and in 1907 it was moved from Whitehall Yard and re-erected in the garden adjoining Gwydyr House, in Whitehall. Not very long ago it was again removed, and was then erected at the rear of the Admiralty, and it is now proposed to place it again in the garden of Gwydyr House. Whether or not it is destined to remain there is doubtful.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, July 3rd, 1912.



SIDNEY SUSSEX COLLEGE
CAMBRIDGE, . NEW WING.
FRANK L PEARSON FRIBA . Architect.



COMPETITIONS.

Hull Almshouses.

Designs for the new almshouses which are to be built under the scheme endowed by the late Dr. C. H. Lee, of Hull, have been submitted to Mr. Edwin Cooper, F.R.I.B.A., as assessor, and that gentleman has awarded first place to those of Henry T. Hare, London, second, W. S. Walker and Son, Hull; and third, (bracketed), Wills and Anderson and H. S. East, both of London. The buildings alone will cost from £25,000 to £30,000. The original idea of the donor was to provide for 100 inmates (fifty single persons and twenty-five married couples), but the funds available will enable this number to be materially increased. Designs therefore have been obtained to afford accommodation for 155 persons. The original site left by Dr. Lee, containing $4\frac{1}{4}$ acres, has also been added to by the purchase of $2\frac{1}{4}$

guineas (returnable) from J. L. Wheatley, Town Clerk, City Hall, Cardiff.

AUGUST 30. SAXON SNELL PRIZE.—Fifty guineas, with medal, for essay on hospital construction. Apply, Sanitary Institute, 90, Buckingham Palace-road.

SEPTEMBER 1. MUNICIPAL OFFICES, GOOLE.—Premiums, £30 and £15. Particulars, Mr. R. Tyson, Council Offices, Goole.

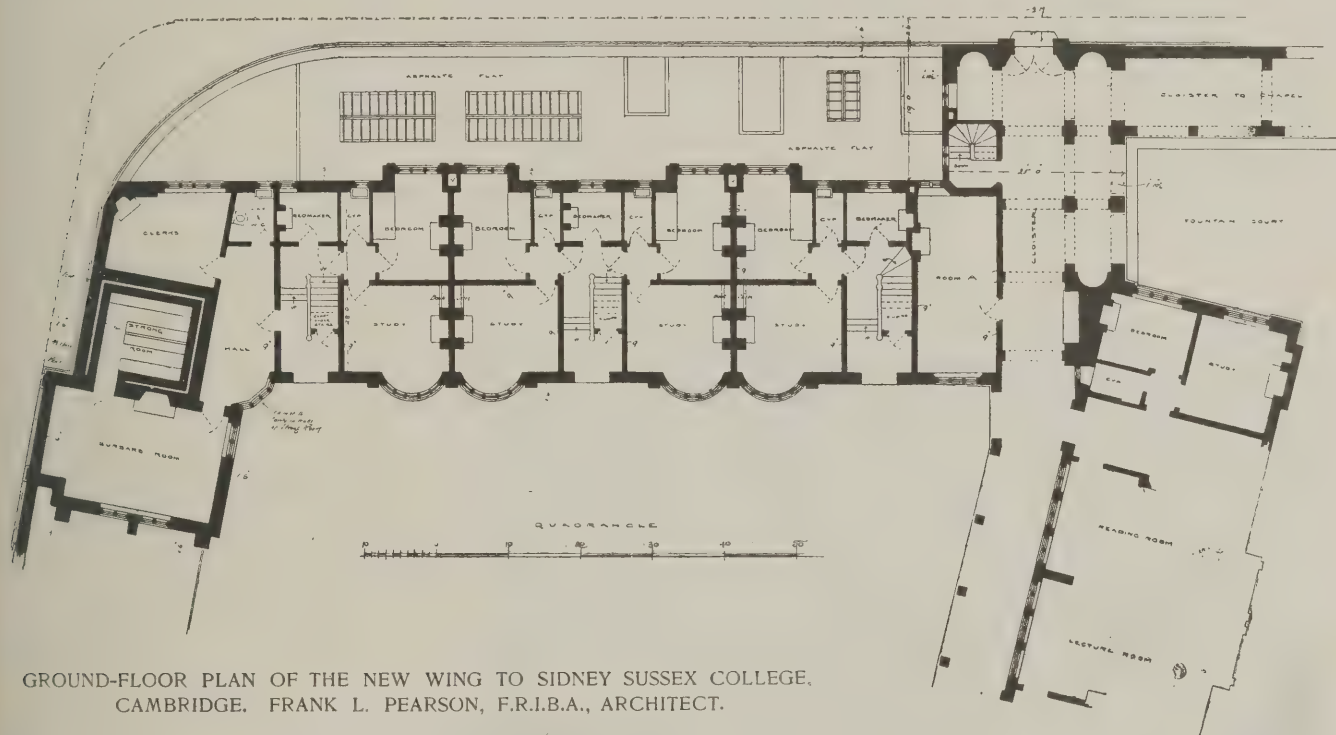
SEPTEMBER 30. NEW BUILDINGS, UNIVERSITY COLLEGE, DUBLIN.—The Governing Body of the University College, Dublin, invite architects to submit designs for new college buildings. Competition is limited to architects living and practising in Ireland. Mr. H. T. Hare, F.R.I.B.A., has been appointed the assessor. Applications, accompanied by cheque for two guineas (returnable) to J. W. Bacon, M.A., Secretary and Bursar, 86, St. Stephen's Green, Dublin.

OCTOBER 1. KING EDWARD MONUMENT,

LEGAL.

Question of Fees for Abandoned Contract.

In the King's Bench Division last week, Justices Ridley and Bray heard the appeal of Mr. A. H. Stott, of Messrs. Stott and Sons, of Manchester, against a judgment of the Wigan County Court judge. It was stated that the matter arose out of the winding up of the Pansy Spinning Co., Ltd. Proofs had been put in by the appellants for a sum of about £8,000, to which they declared they were entitled under a contract made between them and the company, by which they were employed as architects in connection with the erection of cotton mills. The company disputed the contract, and the County Court judge allowed the appellants £250 as a *quantum meruit*. The main question was whether in law the contract was one which entitled the appellants to recover the amount of their claim in any event. The contract



GROUND-FLOOR PLAN OF THE NEW WING TO SIDNEY SUSSEX COLLEGE, CAMBRIDGE. FRANK L. PEARSON, F.R.I.B.A., ARCHITECT.

acres adjoining, with a frontage to Pickering Road. One room is to be a replica in every detail of Dr. Lee's dining-room from the house in Pryme Street, Hull, where he resided for many years. The original furniture will be used, and in it will be placed many mementoes of the donor.

OTTAWA.—Sketch models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

OUR PLATE.

New Wing, Sidney Sussex College, Cambridge.

This building completes the third side of a quadrangle facing Sidney Street, the other two sides of which are formed by existing buildings.

In general lines the design follows the north-eastern side of the quadrangle designed by the late John L. Pearson, R.A., and carried out in 1890.

Accommodation for the bursar and his staff, and four suites for Fellows, are provided, in addition to the rooms for undergraduates, the basement being occupied by baths and lavatories for the use of the whole college.

The materials are red brick, with Weldon stone dressings and tile roofs, and all floors are of fire-resisting construction.

The drawing here reproduced is a view from Jesus Lane, and is exhibited at the Royal Academy. The architect is Mr. Frank L. Pearson, of 12, Mansfield Street, London, W.

provided that the appellants were to have 5 per cent. for their work as architects and supervisors of the cotton mills, the cost of which was to be approximately £270,000. It is obvious that at 5 per cent. on the sum named, the commission would amount to £16,950, and they claimed half that amount as damages for being debarred from earning the full commission owing to the winding up of the company.—Mr. Martelli, K.C., for the appellants, said his clients relied upon a clause in the memorandum of association of the company, to the effect that the object of the company was to erect and equip two cotton mills, and a minute of the board of directors retaining the appellants as architects and consulting engineers at a remuneration of 5 per cent. on the cost of the mills. Before the commencement of the work a compulsory winding up order was made against the company, but he should contend that there was a concluded contract, and that the appellants were entitled to damages.

Without calling upon the other side, the Court dismissed the appeal, Mr. Justice Ridley holding that there was no contract on the part of the company that the mills were to be erected, and Mr. Justice Bray concurring in that opinion.

LIST OF COMPETITIONS OPEN.

JULY 5. ADDITIONS TO HOSPITAL, CONISBROUGH.—Doncaster and Mexborough Joint Hospital Board invite competitive designs (in sepia or Indian ink) for additions to their isolation hospital. Apply, H. M. Marshall, Clerk to the Board, Union Offices, High Street, Doncaster. [The time has been extended from that formerly announced.]

AUGUST 6. FIRE BRIGADE STATION, CARDIFF.—Cardiff Corporation invite architects to submit designs and estimates in competition for a fire brigade station proposed to be erected in Westgate Street, Cardiff. The Corporation have appointed Mr. A. Marshall MacKenzie, A.R.S.A., F.R.I.B.A., to act as assessor. Particulars on deposit of two

NEWS ITEMS.

Great Fire at Dundee.

Damage to the extent of nearly £50,000 is said to have been caused by a fire which occurred on June 26 at the establishment of the Meadowside Calender Company, Ltd., Dundee. The damaged goods consisted chiefly of Calcutta gunnies and jute cloth.

Winchester Cathedral.

For the service-books to be used by the King and Queen at the national thanksgiving service for the preservation of Winchester Cathedral, on St. Swithun's Day (July 15th), Mr. Nisbett, the architectural surveyor to the Dean and Chapter, has designed carved oak covers. The border is taken from the Benedictional of St. Ethelwold, which was transcribed in the Scriptorium of St. Swithun's Monastery, Winchester, in the tenth century.

Mr. Sydney Perks and the "R.I.B.A. Journal."

The "City Press" of June 22 contains the following paragraph: "To the current number of the 'Architects and Builders' Journal,' Mr. Sydney Perks, F.R.I.B.A., City Surveyor, criticises vigorously the 'Willing to wound, and yet afraid to strike,' policy of the Royal Institute of British Architects, and urges that a full

explanation is due to the members. He especially comments on the fact that his speech on the subject at the last meeting of the Institute was not reported in the journal." [In order to correct any possible misapprehension as to the identity of "the journal," it seems necessary to point out that Mr. Sydney Perks's "comment" applies, not to the ARCHITECTS' AND BUILDERS' JOURNAL, but to the official organ of the Royal Institute.]

Chimneyless Manchuria.

Over £1,000,000 of private capital has, according to the local Japanese civil administration, been invested in buildings in Dalny, Manchuria. Discussing the progress of foreign ideas the United States Consul at Dalny says that practically all of the residential buildings erected in recent years were designed and constructed by Japanese architects and contractors, and although the buildings are meant to be of foreign pattern, in many cases the interior arrangement leaves much to be desired. Some of the houses have been erected without chimneys, in spite of the zero temperature prevailing during the winter months, with the result that stove pipes have to be stuck out of windows and elevated to a "safe" sky line.

London's School Building Programme.

The Education Committee of the London County Council has now arranged with

the Board of Education the details of the scheme whereby the schools of London are to be reorganised in order that the size of school classes shall be reduced to forty children in the upper standards and forty-eight for the infants' departments. It provides for the erection of new schools and the enlargement and modernising of existing schools so as to provide 121,270 additional places. The scheme is to be carried out within the next fifteen years, and its cost will be £5,150,000. During the next three years twelve new schools are to be erected; eight are to be enlarged; twenty-two are to be remodelled; and six are to be adapted from secondary schools or pupil teachers' centres, as elementary schools. Within five years the Council must commence the remodelling or rebuilding of twenty-two schools. This financial year the sum of £450,000 will be spent on the scheme, which was adopted unanimously at last week's meeting of the Council.

Liverpool School of Architecture.

The work of the University of Liverpool School of Architecture is to be inspected on July 6th by a party of from eighty to a hundred members of the London, Manchester, and Irish Architectural Associations, who will also visit the cathedral and be entertained at the University Club. The Irish members will extend their visit to Liverpool to one of three days' duration, in order to make a tour, personally conducted by Professor Reilly, of the most notable ecclesiastical architecture of Liverpool and Wirral, and to see Port Sunlight.

Non-ferrous Old Metals Wanted.

Most of the advertisements appearing in the technical Press are for the purpose of selling material. This week we notice among our advertisers a firm who are "anxious to buy." Messrs. Fry's metal foundry, 25-27, Holland Street, Blackfriars, S.E. (one minute's walk from Blackfriars Bridge), are purchasers of all non-ferrous old metals (*i.e.*, all metals except iron and steel, which cost almost as much to handle as they are worth). Readers having, or likely to have, such materials to dispose of, will be glad to make a note of this firm's address.

Non-Inflammable Cinematograph Film.

A demonstration of the Boroid film, for use in cinematograph apparatus, was given last week by the makers. The principal claim for this film is its incom-bustibility. This quality was demonstrated by placing a plain piece of the film in a cinematograph machine and allowing the light from a powerful electric arc to flow through it for some time while stationary—a procedure that apparently had no effect on the film, and did not impart any considerable amount of heat to it. The next test was carried out with a piece of the film coated with photographic emulsion, which was also placed in the machine and exposed to the arc, with the result that in a few seconds the emulsion was completely melted by the heat. A piece of the film was then immersed in a bath of methylated spirits which was ignited and allowed to burn, and although the film was charred to some extent it was not destroyed. It is stated that the prices of Boroid films will be the same as are charged for those of celluloid, and that they have equal capacity for wear. Several completed Boroid films were shown on the screen, with results that did not appear to differ in clearness from those obtainable with the ordinary celluloid film.



BYZANTINE CAPITAL, RAVENNA.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JULY 10th, 1912.

Volume XXXVI.

No 912.



BISHOP'S CHAIR, ALL SAINTS' CHURCH, EALING, LONDON.
WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.

(See page 43.)



ALL SAINTS' CHURCH, EALING, LONDON: INTERIOR, LOOKING EAST. WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.

(For particulars see page 43.)

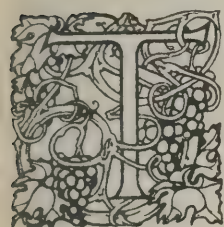
THE ARCHITECTS' & BUILDERS' JOURNAL.

JULY 10th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 912.

"Style" and "Styles" in Architecture.



TOWARDS the conclusion of the remarkable paper recently read at the Institute by Mr. Cram, on "University Architecture in the United States," the author made the significant remark that there had never been but three real styles of architecture in the West, "noble in impulse, organic in structure, perfect in detail," these three being, of course, Greek, Byzantine, and Gothic. Everything else, he said, "is either *patois* or a form of slang." The expression may seem a little too sweeping, perhaps, but it is in the main true. By "the West" Mr. Cram meant Europe, as opposed to the Far East. Indo-Saracenic may be said to be really a style, though its best manifestations are not very numerous. Saracenic in the more general sense is perhaps hardly a style; it is a brilliant and picturesque manner applied to construction, not arising out of it. The Alhambra is a dream of beauty, a network of fairy-like elaboration of detail, but it is no expression of structure; its structural basis is flimsy and incoherent.

Taking it as quite true that the only real styles of the Western world are Greek, Byzantine, and Gothic, what is it that renders them such? It is that each of them, in the first place, is the consistent expression of one system of construction, to the development of which everything else is subordinate; and, in the second place, that the details are in keeping with each other and with the whole, and are suggested by the construction and the material. This is perhaps more absolutely the case in Gothic than in any other style. There are certain details in Greek architecture, or at least in Doric, that one could imagine being removed and yet leaving the style as complete and consistent as it is. For instance, the groovings of the triglyphs. The eye is accustomed to these, and we should have a sense of incompleteness in seeing a Doric order without them; but if we come to think of it, that is really a matter of habit and association more than anything else. The upright blocks which, in consequence of their usual treatment, are called "triglyphs," are really short columns supporting the cornice, so as to take its weight off the thinner slabs between, which perhaps were originally window openings, which, at all events, were in some cases movable (as is proved by some references to them in Greek literature). Except as a matter of tradition, there is no special suitability in their being grooved in that particular manner; they might be left plain or fluted in the same manner as the columns, and be equally consistent with structural expression. Apart from habit, indeed, one might fancy that they would look better fluted. But in a Gothic building of the best period, say the middle of the thirteenth century, one can hardly think away any detail in it without something being lost to the complete expression of the style. We can hardly say this of a Byzantine building either, except in regard to the interior architecture. Santa Sophia is a perfect building internally. Externally the consistent architectural treatment of the buttresses had not been hit upon;

they are left as rather crude masses. The object was to create a great and perfect interior. Gothic at its best is an absolutely perfect style within and without. Perhaps the only other one is Ionic Greek. Doric is the greater style in its monumental expression, but it shows one or two details which have a traditional rather than an architectural value.

The question whether we should accept these great styles as permanent forms of architectural design, and adopt them for our modern architecture, has been fought out and discussed till people are tired of it, without coming to any definite conclusion. It simplifies matters very much to adopt one of them, and to say that the building is in this or that style. Supposing this to be admitted, the difficulty is that one of these perfect and consistent styles, the Greek, is unsuited to our climate and atmosphere, and to some extent to the materials most available, while another, the Gothic, is out of keeping with modern feeling and habits of life. We are much nearer to the Greeks and Romans, intellectually and socially, than to mediæval society and manners. Mr. Cram thought the Byzantine style was equally out of keeping with northern life, but we do not know that it is; buildings on Byzantine lines are not unsuited to this climate, though the style had a Southern origin.

But there seems to be an increasing feeling in favour of giving up imitative architecture, and of endeavouring to be original, and with that we come on the question not of "the style" in which a building is designed, but of the quality called "style." What goes to make "style" in a building? The three great Western styles referred to give the best lesson in that. They show that style arises from the consistent expression of structure, and consistent character of detail. That is what has to be aimed at. Mr. Cram spoke of architecture, other than the three great styles, as being "either *patois* or slang." There is a vast difference between the two. *Patois* is the unconscious corruption of the details of a civilised language through ignorance and want of education. But *patois* is not a ignorance; it arises out of an honest inability to understand the refinements of the central language. It may have a force and picturesqueness of its own. It is the same in architecture. Most of Romanesque architecture is *patois*; it is the attempt to carry out Roman traditions in architecture by people of insufficient culture. "Slang" is quite a different thing; it is the deliberate adoption of vulgarities of style, and it is to be feared that it is rather a peculiarly modern quality of architecture. There is some of it in late German Gothic—in the tricks of interpenetration of mouldings, and in such vagaries as the absurdly shaped clearstory windows at Neuss. But what may be called architectural slang is painfully prevalent in the architecture of the present moment. It is seen in the adoption of tricks of design which have no reference to any architectural tradition or to anything in constructional expression—unmeaning panels, attic storeys in the form of huge sarcophagi, etc., things which are constantly repeated and have no architectural meaning at all. That is what we should call architectural slang, and it is not architectural style. It is the merit of the French system of architectural education that the

students are not allowed to introduce slang; they have to keep to the traditional architectural language. This may result, as was maintained in a correspondence in the Institute Journal, in making the architecture of a city like Paris somewhat monotonous, but it saves it from being vulgar.

And that is the virtue of style in architecture. Style means the true expression of structure, and the obliteration of every detail which does not express something and which is not in keeping with the general design. It is a quality which may exist in a building which is not a copy of any special style of the past. On the other hand, a building may be, superficially considered, in this or that style, and yet want the quality of style altogether.

Cross-lighting and Ventilation in Schools.

IN regard to Mr. Widdows's letter on page 12 in our last issue, surely every-day experience shows that it is more difficult to ventilate thoroughly a large building in which many are assembled than a smaller one in which fewer persons are assembled. An ordinary dwelling-house does not need mechanical ventilation except sometimes at a large dinner-party, when in many cases it would be very much welcomed by the guests. A theatre or a concert-hall does require mechanical ventilation. The larger numbers one has collected in one building, the more difficult it is to keep the air pure. Theoretically perhaps it ought not to be so, since a school is supposed to allow so much square space for each child; but practically it is so. And then there are the very varying circumstances of the atmosphere to be considered. Suppose there is a strong wind blowing; in that case the hoppers would have to be closed and the amount of air that found its way through what may be called accidental passages would not be sufficient to counter-balance that. Then suppose a calm hot day, just the kind of day when the need of internal ventilation is most felt; there may not be an absolute calm—there very seldom is; but there is a lowering of the pressure and movement of the air to a minimum, just when ventilation is most wanted. It is absurd to suppose that the cross-current ventilation can be equally operative in all weathers; in depending entirely on that, we are depending on a variable agency which we cannot control.

It is surely absurd to say that if after cross-ventilation the air is found charged with impurities "the neighbourhood must be very unhealthy, and it is a wonder anybody is alive." In the open air everything is carried away; in the interior of a room it is not, except by mechanical ventilation. That we can control and measure; the natural ventilation we may be able to measure, but cannot control. The objection to the plenum system, that the air comes through ducts which it is difficult to keep clean, is one to be considered; it requires a great deal of care and attention in working. But the case of the Birmingham Hospital, in which the plenum system is (or was) rigidly applied, was conclusive, on the testimony of doctors and nurses, as to its efficiency in keeping the air in the wards pure. There was much controversy about it at the time, and the present writer specially investigated the working of the system, and was convinced of its efficacy, somewhat against previous prejudice. True, a hospital is not a school; but it showed the efficacy of mechanical ventilation under the most difficult circumstances. But mechanical ventilation may be employed on the extraction system, which is perhaps more fitted for schools; in that case the ordinary hoppers would supply the inlet, the extract fan would merely ensure the changing of the air at a certain rate and in all conditions of the atmosphere. It is impossible that automatic cross ventilation can be depended upon to be equally effective in all states of the atmosphere.

We have not referred to what is another reason against the general adoption of the cross-light and ventilation system—the fact that it means lighting the classrooms

from two sides. The general consensus of expert opinion is in favour of left-hand light for working in, and this system does away with it. And it seems to us that cross-lighted classrooms, according to their double aspect, must be in danger either of being cold in winter, or having too much sun in summer. We do not say there are no merits in Mr. Widdows's system; he has evidently given great care and attention to school-planning; but we certainly think that the disadvantages are greater than the advantages.

Water Engineers and Economy.

THE paper by Mr. Whitehouse, read at a meeting of the Institution of Municipal Engineers, and reported in our last issue, brings into light once again the extraordinary ideas which water engineers seem to have as to the requirements of water per head for the conditions of civilised life. He totals up the daily supply per head required as 23 gallons, and considers it "too lavish." The only idea a water engineer seems to have about water is that you should use as little of it as possible; and among the items which go to make up his wretched total of 23 gallons is a "proportionate allowance" of 5 gallons per day on the assumption that "a plunge bath is taken once a week." Some of these gentlemen would like to recall what we may call the "antediluvian period," when people had baths on Saturday night. Everyone should have a plunge bath every morning; and his five gallons a day is not even enough for a weekly one. In the average size of bath a plunge bath for total immersion takes 50 gallons, not 35, as he seems to assume. Then again, they want to go back to the old meagre supply of 2 gallons for the water-closet flushing cistern, although experience, fortified by special experiments made under Board of Trade orders, has amply proved that 2 gallons is insufficient to ensure either the adequate cleansing of the pan or the adequate carriage of excreta down the drain; a state of things which in a crowded city is injurious to health and offensive even to think of. The proper question in connection with water supply is not one put by the water engineer to the public—"How little can you use?"—but it is the question from the public to the water engineer—"How much can you supply?" The fact is that there is water enough in these rainy isles for an ample supply for everyone, if it were properly managed. The difficulties in the way are, first, that a great concourse of people collects in towns, and then of course there is not water enough on the spot, and it must be conveyed from a distance; secondly, that there is nothing like adequate provision for water storage. Oceans of water run away every year, which might be stored and filtered for supply. Of course, at present the number of persons who really take a plunge bath every day is a small minority of the whole population; but the sense of the value of a liberal use of ablution water will go on extending as education and the standard of living rises, and the water companies will have to find it. In any case, to find a water engineer, at this time of day, preaching to us the old standard of 23 gallons a day (*less* than the old standard, for 26 gallons a day was recognised as a standard a quarter of a century ago), and advocating a return to the nauseous conditions of the 2-gallon flushing cistern, is really surprising.

The Rhodes Monument.

THE monument to Cecil Rhodes, of which an illustration appeared in the architectural room at the Royal Academy some years ago, has just been what the French call "inaugurated"; and the "Times" of Friday last printed an effective rough sketch, such as can be printed in a daily paper, serving as a reminder of the general composition of the design. It stands on the slope of Table Mountain, on a spot on which Rhodes had intended to make a large enclosure for his lions, and to add to the attraction by erecting a kind of temple

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or columned portico there. The sentence in the "Times" about "the lions enjoying a large range of liberty, together with architecture on a large scale," reads rather oddly; but the meaning, of course, is that the lions and the architecture would form rival attractions to the sight-seers. And now his monument has been erected on the same spot in a manner which, to some extent, combines the attractions of lions and architecture, for it consists of a Doric portico, led up to by a great flight of steps, which are flanked by great stepped retaining walls with a sculptured lion couchant on each platform of the retaining wall, as on so many successive pedestals. In the centre, at the foot of the steps, is another pedestal bearing Watt's equestrian group, "Physical Energy," which was during one London season the butt of the cab-drivers waiting in the courtyard of Burlington House, but which is admirably in place in its present position, and might have been made to commemorate Rhodes. The portico is designed in the severe style of Doric architecture illustrated at Pæstum, which will have its full effect under the sun of South Africa. The monument has been worked in the granite from the base of Table Mountain; left, we gather, with a comparatively rough surface finish to harmonise with the situation. Mr. Herbert Baker, who had acted as Rhodes's architect during the lifetime of the latter, may be congratulated on having produced a great and most impressive monument, grand in its simplicity, and equally suited to the situation in which it is placed and to the character of the extraordinary man whom it commemorates. There are few modern instances in which a monument to an eminent man has been so successful and so exactly the right thing. There may be differences of opinion about Rhodes, who made many enemies in his lifetime (as every masterful genius does); but there will be no difference of opinion as to his monument.

Mean Dwellings.

IS Saul also among the Philistines? The Right Hon. John Burns, President of the Local Government Board, and the "only true begetter" of the Housing and Town Planning Act, is, it has been insinuated—but we do not join in the accusation—aiding and abetting the mean dwellings movement, which runs—or crawls—counter to the direction towards which he was thought to have committed his steps. Mr. F. W. Jowett, the Labour Member for Bradford West, asked the President, last Thursday, in the House of Commons, whether he had suggested the substitution of flats for the self-contained dwellings specified in the scheme submitted to him by the Doncaster Corporation, and, if so, why he had interfered in the matter, seeing that there is no lack of land in Doncaster. In reply, Mr. Burns explained that the Corporation had to provide accommodation for tenants whom they had displaced, and in the consequent scheme they seem to have exceeded the rental value that Mr. Burns thought appropriate to the circumstances. He therefore suggested that they should arrange for small dwellings in flats, or for houses having fewer than three bedrooms, so that the rent might be reduced below the 4s. 9d. a week proposed by the Corporation. The amended scheme drawn up with a view to meeting this suggestion provides for thirty-six dwellings in eighteen houses, at rents of 2s. 6d. to 4s. a week. No doubt Mr. Burns was actuated by the best intentions. There are people who cannot afford 4s. 9d. a week for rent, and they must be housed, more particularly when they have been turned out of dwellings for which the rents were much cheaper; and Mr. Burns, out of tender consideration for their hard case, suggested a way out of the difficulty. That is the head and front of his offending. The fact is that a satisfactory solution of the housing problem awaits the solution of social problems that are still larger and still more hopelessly insoluble, and as long as there is mean living there will be mean building. Mr. Jowett's attitude on the question is probably that of the party to which he belongs, whose position, if we under-

stand it aright, is that the meanest form of labour ought to be paid sufficiently well to leave a fair margin for rent; or that, alternatively, where bad economic conditions (for which society at large is responsible) compel a corporation to undertake housing, the work should be done in no niggardly spirit, nor even with a strict regard to the balancing of accounts. If these poor people receive more than their money's worth, the assumed loss is merely a matter of account-keeping. The community actually gains by the transaction; but the gain in health, morality, efficiency, cannot, and an adverse cash balance can, be made manifest in the profit-and-loss accounts; and corporations, being dependent on the suffrages of the ratepayers, who seem to have a fondness for figures, are usually very nervous about getting the housing balance on the wrong side of the ledger. And so we go on building meanly, and even the sturdy President of the Local Government Board is compelled to bow to these depressing circumstances.

Abuses of the Workmen's Compensation Act.

THE seamy side of accident insurance has been already sufficiently in evidence; but it has remained for the insurance brokers and agents to show it in its most sinister aspect. One of the speakers at their recent international congress, held at the Leathersellers' Hall, laid stress on "the increase in the number of speculative solicitors," and on the canvassing which went on directly or indirectly by or on their behalf. The speculative solicitor, it seems, renders the much-abused speculative builder an angel of light in the comparison which the adjective suggests, if what has been said of their respective records can be at all trusted. We were told at this meeting that, as the result of the speculative solicitor's enterprise, "In the end, the workman gets less than he otherwise would have done, the employer or insurance company pays more, and the balance from both sides goes into the pocket of the legal adviser—generally out of proportion to the amount of compensation involved or services rendered." That is a mild indictment compared with what another gentleman said in course of the discussion. He declared that "outside great hospitals in London to-day there were touts waiting to see accident cases go in, so that they could obtain the names of individuals and get the legal cases into their hands." Such ghoulis propriety would seem impossible of belief were it not still more difficult to accuse an insurance broker of flighty imagination; but in reluctantly admitting that this touting is within the bounds of possibility, it were merely just, although certainly it was by no means necessary, to add that such conduct is no doubt strongly repugnant to the honourable profession to which are supposed to belong the touts who impart so unpleasant a significance to the term "solicitor." Between the "speculative solicitor" and the unscrupulous or weak-kneed doctor—*Arcades ambo*—the Workmen's Compensation Act becomes rather an engine of extortion than an instrument of equity, and the malingerer needs no instruction in the base uses to which it can be turned. We must confess, however, that we did not at first quite follow the reasoning of the speaker who declared that under the touting system the damages became larger. The assertion that more is paid while the injured workman gets less seemed to be merely a piece of rhetorical antithesis; since it is not very easy to understand the superior ability of the "speculative solicitor" to obtain higher damages than could be got by a more reputable member of the profession. Perhaps what was meant was not that, in consequence of the "speculative solicitor's" superior skill, individual cases are more fruitful in damages, but rather that the number of such cases is increased through his activity in promoting them, so that the damages are heavier cumulatively. If that is the meaning implied a very delicate point arises. If the workman is really being egged on to claim damages, and primed and coached in the preparation of his case, that may mean that he is receiving valuable technical enlightenment, for which the

extra emolument alleged to be derived by the speculative solicitor is the just reward of his specialised skill; or, on the other hand, it may mean that the workman is encouraged in exaggeration and other forms of iniquity which go to make a trumped-up claim, and which might not have occurred to his unaided intelligence. Abuses of the Act are perhaps inevitable; but it should be within the united powers of the insurance companies and of the organised employers to keep them down to a minimum, and to see to it that they shall be rare and incidental rather than common and systematic.

A Question of Wallpapers.

OLD people of the present day can probably remember a time when the proper and accepted form for a hall and staircase paper in an ordinary dwelling-house was a paper lined out to represent joints in stonework, and usually "marbled." That was the Early Victorian ideal of the staircase wallpaper. It is curious how history, in these as in greater things, repeats itself. An architect sends us a circular which he has just received from a firm of paperhangers, accompanied by a lithograph of a new paper, which is supposed to supply a long-felt want for "a paper of this nature which should have sufficient dignity to be used on good work." This is a wallpaper ruled off into lines to represent masonry joints, not "marbled" certainly, but in other respects the old idea of the paper in imitation of masonry revived. As a rule, the more we can afford painted walls and the less papering of them there is the better for the hygienic condition of our houses, not to mention other considerations. But, at all events, a paper should look like a wall-paper, and not like something monumental.

The Haileybury Jubilee.

IN an admirable article on the Jubilee of Haileybury College, Herts, a writer in the "Times" glances at the buildings, which have an interesting and somewhat curious history. The present buildings, though much extended from those of the old East India College, have developed out of it; and they afford a very interesting example of what can be done by ingenious architects, not only to adapt an old edifice to a new purpose, but to build on additions which, while striving after some sympathy and harmony with the old work, are founded in fact on principles at variance with those of the original designer, and aim at correcting or veiling features which a changed taste has grown to regard as faulty. The main feature of Haileybury is still its noble quadrangle, said to be the second largest in England; but the buildings, which of old merely formed the four sides of the quadrangle, have now extended in different directions outside; and were it not for Sir Arthur Blomfield's fine dome-crowned chapel, inserted deftly as a central feature in the old façade, the comparative lowness of the original structure, compared with the extended scale of the quadrangle, would be even more emphasised than it was originally. The architect of the old East India College was Wilkins, the architect of the National Gallery; and just the same fault that has been found with that—namely, its low height compared with the large open space of Trafalgar Square—might be found with the original buildings of Haileybury in relation to the size of the quadrangle. How far the final judgment of architectural taste will endorse this criticism in the case of either building remains to be seen. When the new public school was started, and in theory at least "boys" took the place of "men," a great deal was necessary to fit the old buildings to their new purposes. In the East India College each pupil had a small room to himself for study and sleeping, with an alcove for a bed at one end. Two sides of the quadrangle, and part of the third, were occupied with these rooms, in two storeys. And the first thing to be done was to convert most of these separate rooms into long dormitories, fitted with cubicles or com-

partments, by knocking down all the partition walls. Some, however, of the former students' rooms were left as "studies" for boys in the upper forms. These dormitories are the "houses" at Haileybury, and in all the new additions the same scheme has been continued. There is only one separate boarding-house, which stands at a little distance from the main buildings. Haileybury is very fortunate as regards both its site and its situation. Standing on relatively high ground, indeed the highest hill in Hertfordshire, only twenty miles from London, and only two from the county town, it is yet in the very heart of the country. All round about its buildings Haileybury has secured for itself sufficient land for any possible extension of building or expansion of playing-grounds, and, moreover, for secure intrenchment against encroaching builders, and the acreage of the college estate is now many times bigger than the fifty-five acres of the East India College property bought in 1861. Among the most important of the jubilee-celebration functions was the laying of the foundation-stone of the new Big School, which is chiefly the gift of old Haileyburians, who have chosen this method of commemorating the jubilee of a school that seems second to none in its power of maintaining the affectionate loyalty of its old boys. Princess Henry of Battenberg laid the foundation-stone of the new building, of which the architects are Messrs. Simpson and Ayrton, who had the honour of being presented to the Princess.

Buckhaven for Bustle.

THE Scottish reputation for far-sightedness was rather neatly vindicated at a recent meeting of the town council of far Buckhaven; also the reputation for laconic terseness. Further, there was a strong suggestion of a tendency to long-windedness in the matter of settlement of accounts; but this, we trust, is by no means characteristic of our northern friends, and certainly it is not peculiar to them. Dealing with these records in inverse order, we note a member's motion that action be taken for the recovery of overdue accounts for "private improvements," whatever that may mean. Estate development and speculative building seem to be implied. Between £2,000 and £3,000, he said, was due to the council, "several sums standing back for twelve years." Would not these be statute-barred?—or does the law of Scotland take cognisance of a tendency which we think not to be characteristic and, alas! know not to be peculiar? The leisureliness and leniency of the Buckhaven Council were further illustrated by the attitude of the member who moved that legal action be taken: "He was prepared to give time if an attempt was made to pay." Evidently he wished to safeguard himself against any charge of indecent precipitancy which might be launched against him by those whose accounts were twelve years overdue. Then came a further indication that, in the matter of arriving at paying-point, Buckhaven Council is not addicted to hustling. A member complained that the carters and scavengers "had never got the minimum of 24s. per week which he had carried a considerable time ago." One feels a certain amount of nervousness as to what "a considerable time ago" may mean in Buckhaven; more especially since the forward glance seems as effectual as the backward in annihilating time; for when this champion of labour added that "even the officials themselves, who get exorbitant salaries, do their best to keep the poor men down," a member commented, with a significance that should be patent to the dullest intellect, "November is near." Seeing that, according to the Southern calendar, July was then but two days old, the implied electioneering was, according to the Southern estimate, taken at a pretty long range. In this respect there would really seem to be some affinity between Buckhaven and Bisley. At both places the Scots aim "vera deeleberately" at a long score at a long distance, and are generally very successful in making it; but Buckhaven must beware of acquiring a bustling mood.

THE AUSTRALIAN FEDERAL CAPITAL, CANBERRA.

THE unfortunate dispute that arose with respect to the conditions of the competition for designs for a Federal Capital City at Canberra shut out members of the various great architectural organisations at home and abroad from a rare and splendid opportunity of showing their skill and adding lustre to their names. It will be remembered that when the conditions were published, the Australian Institutes of Architects promptly protested against them, the principal objection being that "there was no proper provision for the appointment of qualified assessors." These Institutes, being affiliated to the R.I.B.A., appealed to that body for support, which was accorded, with the consequence that the members of these organisations loyally refrained from competing. Every effort was made to get the conditions altered, but the Australian Government remained

obdurate, contending that there was no substantial grievance, as the assessors were eminently qualified for their task.

The assessors were—Mr. J. M. Coane (chairman), "a well-known consulting engineer and surveyor in Melbourne"; Mr. J. H. Smith, president of the Victorian Institute of Civil Engineers; and Mr. John Kirkpatrick, "a Sydney architect of great ability, who was a member of the Committee appointed by a preceding Government to report upon the suggested site for the capital." The secretary was Mr. C. J. Clarke, a Tasmanian architect. In reply to a published communication on the subject from the secretary of the R.I.B.A., Sir G. H. Reid, High Commissioner for the Commonwealth of Australia, concluded with this somewhat curious pronouncement: "The nature of the competition must be kept in view. It is not for a building, or series of buildings. It is to submit a design for a new city and surroundings on a vacant piece of country, with all the town, street, garden, and park planning such a project involves." Did Sir G. H.



FIRST PREMIATED SCHEME, BY WALTER BURLEY GRIFFIN, OF CHICAGO.

The city is planned so that the three mountain peaks about it will close its principal vistas and form a splendid background. The central district will comprise three great centres—the Government, the Municipal, and the Mercantile. The author claims that he has introduced many improvements that would make Canberra superior to any existing city.

Reid really suppose that this explanation was necessary? If so, does he imagine that an architect is one who is solely concerned with the designing of buildings?

But, the matter having been settled, it would be unprofitable to revive the controversy. As we announced in our issue of June 5, the winners of the competition are as follows: 1 (£1,750), Walter Burley Griffin, Chicago; 2 (£750), Elien Saarinen, Helsingfors, Finland; 3 (£500), Alfred Agache, Paris. Reproductions of their designs are here shown. Mr. Coane submitted a minority report, in which he suggested the following awards: 1, Mr. W. Scott Griffiths, Sydney, who stated that the design was the joint work of himself, Mr. Robert Charles Gibben Coulter, and Mr. Charles Henry Caswell; 2, Mr. Arthur C. Comly, Cambridge, Massachusetts; 3, Mr. Nils Getterstedt, Stockholm, Sweden. Two designs recommended in the majority report for special mention were those submitted by Mr. Harold Van Buren Magonigle, of New York; and by Messrs. Schaufelberg, Rees, and Gummer, of London.

With reference to the competition, Mr. O'Malley, Minister for Home Affairs, said that he would be justified in using all the designs, if necessary, in order to

produce the working design from which the capital would be built. "A park might be taken from one, a boulevard from another, and a public square from a third." Incidentally, the soul and spirit might be taken from the lot!

Mr. Walter B. Griffin, the Chicago architect whose plans for the new Australian capital have been awarded the first prize, is thirty-five years old, and is a graduate of the University of Illinois.

He has practised as an architect in Chicago since leaving school in 1899. He is a landscape artist as well as an architect, and his work has been principally in town extensions and garden sub-divisions.

His Australian city is planned upon the radial or gyratory type, with three principal centres, from which boulevards and streets radiate. His only other experience in planning a city was when he drew plans for the rebuilding of Shanghai, China, which, a few years ago, it was proposed to rebuild a few miles from its present site, with its narrow streets, swarming tenements, and insanitary areas. Mr. Griffin drew the plans for the new Shanghai in detail, but the scheme was abandoned.

In planning the Australian capital with centres and radial avenues, Mr. Griffin has followed the plan generally



SECOND PREMIATED DESIGN, BY ELLIEN SAARINEN, OF HELSINGFORS, FINLAND.



THIRD PREMIATED SCHEME, BY ALFRED AGACHE, OF PARIS.

held by architects to be the ideal one for cities of the future. Among the foremost advocates of such a plan was the late Mr. D. H. Burnham, of Chicago.

"The plan I have prepared for the Australian capital will," says Mr. Griffin, "cover an area of twenty-five square miles, and is intended to provide for an immediate population of 75,000, with ample provision for the growth of the city as gauged by the increase in population of other foreign capitals. The plan is complete in every detail, and covers everything that the city will need—street-railway system, steam-railway line, business and manufacturing districts. I have planned the city so that the three mountain peaks about it will close its principal vistas and form a splendid background for its architectural beauty. The central district of the city will contain three centres—a centre devoted to government buildings, the municipal centre, and the mercantile centre. The outlying district will contain five additional centres. Three of these will be agricultural centres, one a manufacturing centre, and another a suburban residence centre.

"The city will have many features unknown to the modern city; I would call attention to two of these as especially distinctive. One is that the residences built upon the streets connecting the great radial avenues will

enjoy quiet and secluded parklike atmosphere, and at the same time never be farther removed from main business thoroughfares than four blocks. The other unusual feature is that the city will have but one railroad entering it. All the freight yards, freight depôts, and warehouses and transfer facilities will be located outside the city limits.

"Railroads that enter large cities mar their beauty, and are always flanked by poor districts. The railroad line that will enter the Australian capital from the north and pass through it to an exit on the south has been treated in my plans with regard to beautifying rather than disfiguring the city.

"I do not know to what extent my plan will be carried out. The Australian authorities may merely adopt my ground plan and fill in the architectural details to suit themselves. However, if my plan is carried out in all its details, I think the Australian capital will be the most beautiful city in history."

Perhaps Mr. Griffin did not say that last naive sentence; or if he said it, perhaps he did not know that it would be published to an admiring world. But perhaps Chicago is not more noted for its monumental town-planning schemes than for its monumental modesty.

HOUSES AT ESHER PARK AND
BRANCASTER.

The house at Esher Park, Surrey, shown by the accompanying illustration, has been built to the requirements of Mr. Ernest C. Pegler. The walls are finished with cement and sand to a fairly even face, and are distempered a cream colour, with a tarred base. The bricks for the chimney-stacks and around the porch are sand-faced local bricks, and the roof is covered with hand-made tiles of a dark red colour. The loggia is a special feature; it has a vaulted ceiling in concrete. The windows are leaded lights in iron casements, and the boarding in the gables is of elm left untouched. The builders were Messrs. Moss and Sons, Ltd., of Loughborough.

The house at Brancaster, Norfolk, is about to be built on a site facing the golf links and the sea. The walls are to be hollow, of local bricks, with red brick quoins and dressings to the windows, etc., and chimney-stacks. The general walling will be distempered a grey colour, and the roof will be covered with pantiles. The windows will have vale frames and iron casements filled in with leaded lights. The interior will be treated simply, with oak doors and staircase, and white distempered walls, and radiators will be fitted in all the rooms. The garden has been designed by the architect, and has been in process of formation for some time past.

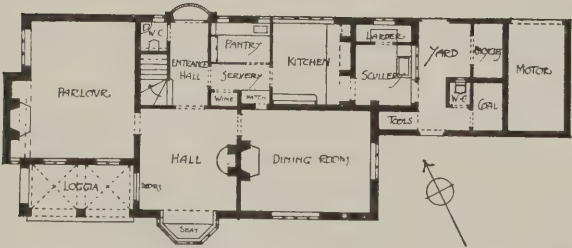
ANNUAL EXHIBITION OF THE
LIVERPOOL UNIVERSITY SCHOOL
OF ARCHITECTURE.

The most striking feature of this year's exhibition—now open to the public till July 13th—is the evidence it offers of an established practice, both in design and draughtsmanship, a practice accepted and developed by each student of the school, making for the best performance in every case, and producing results whose almost uniform excellence is its best justification. It is true this practice is in the main borrowed, taken with little alteration from that in vogue in the American schools, who, in their turn, appropriate it from the Beaux-Arts, but, in the opinion of the present writer, its complete applicability to the requirements of this country cannot now be seriously questioned, and the really remarkable fact is not its introduction, via the Liverpool School, into English architectural education, but the length of time the change has been resisted. This exhibition abundantly proves that something of a solid tradition has already been founded. The students clearly know what they are doing and why they are doing it; they have a definite philosophy of their art, and definite aims; they work in an atmosphere of specific ideals; in a word, they constitute a real school of architecture.

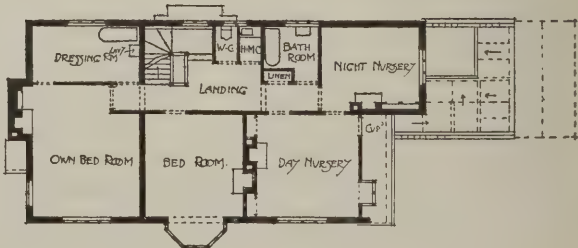
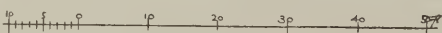
The product of their labours, between three and four hundred drawings, are arranged in the large Exhibition Hall,

Liberty Buildings, in four separate sections: First Year, Second and Third Year, Travelling Scholars, and Evening School work, whilst an additional compartment is devoted to the exhibits of the allied School of Civic Design. In the first three sections a further sub-division into cubicles, one for the work of each student, is adopted. The drawings exhibited may themselves be classified under four heads: (1) Measured work and reconstructions; (2) designs ranging from compositions in the orders to problems set for the R.I.B.A. Final by the Board of Architectural Education; (3) work produced in co-operation with students of the Town Planning Department; (4) examination designs. In all four the general level of the school's ability in the sheer technique of draughtsmanship, sciography, perspective, and colouring, is admirable, and in several cases of exceptional excellence. Almost every variety of rendering is represented, from sepia monotonies to the most complex and difficult colour combinations.

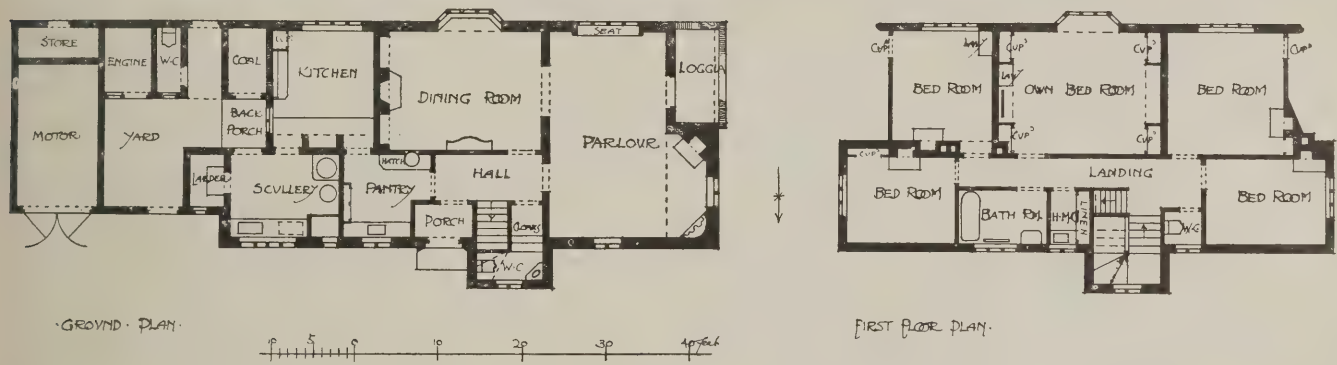
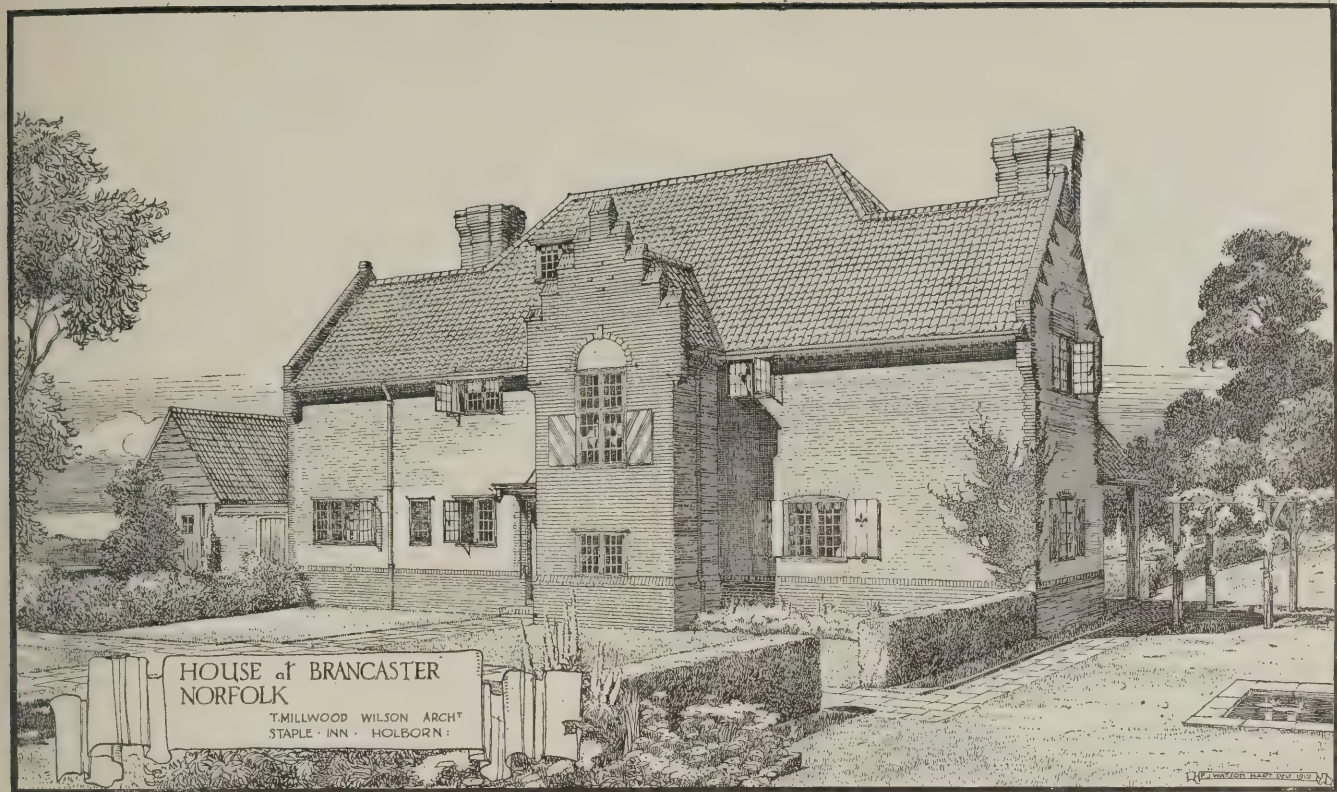
This diversity of treatment, in which the students seem to acquire such facility, is employed to peculiar advantage in the case of their measured work. It is the custom of the school for students at the end of their first year to spend the long vacation in measuring a building or buildings approved by a board of studies. By this means they acquire an intimate direct knowledge of detail form at a time when it is of greatest value to them, and more



GROUND PLAN



FIRST FLOOR PLAN



readily than is possible through any other method, for their previous year's training has put them in a position to understand what they measure, and in the ensuing part of their course they are called upon to employ the knowledge thus obtained.

To facilitate the work of measuring, students usually undertake it in pairs, and the buildings selected for them may either be in England or, if their means permit, abroad; or, again, if they have in their first year won any of the financial prizes the school may be able to offer, they will be advised to study Continental examples. Now, as is inevitable, the bulk of the work produced under such conditions is duplicate, each student of any pair having the same series of notes, plottings, and measurements as his companion. A redundancy of results is then obviated in two ways; first, by different elevations being drawn out to different scales, and by avoiding coincident points of view in the perspectives; secondly, by adopting entirely different methods of rendering. Thus, the Royal High School, Edinburgh, is presented by one student in a number of sepia studies, elevations, sections, plans, and perspectives, all to large scales, whilst his colleague has rendered it, giving quite other details and to a different scale, in an elaborate colour arrangement of silver, greys, and blues. So, too, with the Propylæa at Munich; Schinkels Altes Museum, Neue Wache, and Schauspielhaus, Berlin; the Ecole de Médecin, Paris; the Old Town Hall, Manchester, and the Harris Institute, Preston. Wherever students have been engaged in measuring the same building, the ultimate results are complementary, not repetitive. The work of recording buildings is, moreover, evidently done with great care and conscientiousness, the standard demanded by the Board of Studies being very stringent in this respect, and determined doubtless by the fact that much of the measured detail is embodied in the school's annual publication. That included in the next volume is, we understand, to be to a much larger scale than hitherto, and this circumstance has resulted in again raising the standard of accuracy.

Of the work shown in the Travelling Scholars' section of the exhibition, the drawings submitted by Mr. Prestwich are on the whole the most interesting—a series of studies in Rome and Athens and a portion of the material from which he is reconstructing Palæstrina. As the school's student at the British School at Rome he spent the autumn and winter of last year, and the early months of this, in research at Palæstrina. He is now engaged in producing great reconstruction drawings, which it is hoped will shortly be published.

To turn to the designs. They include a stylar monument for the centre of the western plateau behind St. George's Hall, a South African War Memorial Hall, a bridge and approach to a city on a river, a terrace of houses, and many other problems, including those "testimonies" selected by the R.I.B.A. Board of Architectural Education for exhibition to the allied societies of Great Britain and the Colonies. Here, apart from the natural tendency of the best students to influence and even, in virtue of the dominance of their ability, to create a following in style, we observe a vigorous development along the lines of modern American architecture. It is, in fact, evident that the United States furnishes either the model or the inspiration for the composition, and even detail, of nearly every essay in design. But it is also clear that this enthusiasm for American achievement has behind it a sound knowledge of classic forms, and is not ill-considered or superficial in its nature. The school has, indeed, progressed far since those days when it adhered stolidly to eighteenth century Palladianism. Its teaching has developed and widened, till now it possesses students who can produce competent designs in Georgian, in First and Second Empire, in néo-Grec, and in every relevant phase of Classic architecture. From a tentative following of American practice has followed a close adherence to the manners of individual masters, amongst whom Charles

Follen McKim, Hornbostle, Cass Gilbert, and Van Buren Magonigle are the chief favourites.

In the third group of exhibits, the drawings for the Lever Prize Competition, another element enters into the work of the school, namely, the influence of the Department of Civic Design on town planning. It will be recollected that a few years ago, amongst Sir William Lever's many benefactions to the school was the establishment of an annual grant of £50 to be shared with the School of Civic Design for the production of schemes dealing with the laying out of specified areas and their architectural treatment. A portion of the Port Sunlight estate was the site first chosen, and so much did the winning scheme commend itself to Sir William Lever that he caused it to be carried into effect. In the present instance Liverpool is the scene of proposed improvement, and this year's problem consisted in re-designing a portion of land bounded by Bromlow Hill, Mount Pleasant, and Bedford Street, and the erection on it of a new University of Liverpool. A University Boulevard was to be created, bringing the buildings grouped on either side of it into direct touch with the centre of the town by means of an approach through formal gardens from the Adelphi corner. For the first part the co-operation of the School of Town Planning was required. The Civic Design students prepared various individual treatments of the problem, and the authors of the plans placed first and second received prizes of £15 and £10 respectively. Taking the scheme placed first as the basis of their efforts, the students of the School of Architecture then prepared designs for the buildings to be erected thereon, and those awarded first and second positions also received similar premiums. As indications of what Liverpool might possess in the way of University architecture, these designs are as stimulating as anything could well be. In place of the existing confused medley of Victorian erections would be a finely grouped series of buildings—engineering, chemical and physical laboratories, libraries, senate houses, lecture theatres, unions, gymnasias, and all the various accommodation required by arts and science colleges—crowned on the summit of the hill by an assembly hall, a building which the University now finds to be an increasing need. Fine broad quadrangles and terraced gardens, adorned with fountains and statuary, lead downward to the main entrance in the centre of the town. Whether Sir William Lever will ever feel disposed to carry out the winning scheme in this case—it is the work of Mr. R. H. Matlocks, of the Town Planning School, and Mr. W. H. Thompson, of the School of Architecture—we do not know, but we are assured that if he did so he would win the undying gratitude of the citizens of Liverpool.

Finally, we come to the drawings prepared in examination, an important feature of the exhibition, since it is from them that some indication may be obtained of the relative capacities of the students as revealed under conditions which preclude the possibility of their obtaining any outside assistance in the form of advice or through the consultation of books. The examinations in design were three in number. For degree students, *i.e.*, for those taking the B.Arch. course, a four weeks' problem was given, the designing of a combined museum and art gallery on a free site, to contain specified accommodation within certain limiting dimensions. Quite the best solution is submitted by Mr. A. R.

Sykes in a number of carefully elaborated drawings. Externally his conception is a very ingenious fusion of Cass Gilbert's "Allegheny Memorial" and St. George's Hall; internally Schinkel's Altes Museum apparently supplied the *motif* of the arrangement. A good second is Mr. Narasappa, a special student sent to the school by the Government of Mysore to acquire experience in monumental architecture. For certificate students, who, if they obtain a "first class" are, like the "pass" degree students, exempted from the R.I.B.A. final, there was a six days' design. This time the subject was a (covered) public swimming bath, and it evoked many excellent performances. Mr. W. H. Thompson, the winner of the Holt Travelling Scholarship (£50) for this year, has evolved the most satisfactory treatment, both in plan and elevation. His half-inch detail of the main entrance façade was worked out with incredible fullness considering the length of time allowed. Next to him comes Mr. R. F. Dodd with a solution carefully considered and competent in every way. In the third examination, a six hours' sketch design for both degree and certificate students, it is rather more difficult to estimate the comparative degrees of success which the candidates attain, owing to a choice of subjects being permissible, *viz.*: (a) sketch for a poster for an architectural exhibition, (b) wall monument to an architect, (c) monument at entrance to a cemetery. Probably Mr. R. F. Dodd's Burnham-esque handling of the latter subject should be placed first, though many of the poster designs were excellent.

In conclusion, the section of the exhibition devoted to the selected work of the evening school should be noticed. In measured work, as in actual design, the evening students show a keenness that is as admirable as is the quality of their performance. To judge from the work he submits, the ablest amongst them is Mr. F. Jenkins, and he has in some measure obtained recognition of his merit, since his drawings have gained him the Ravenshead Scholarship (£60) in competition with many other candidates outside the day school.

THE NEW PRESIDENT OF THE R.I.B.A.

Professor Reginald Blomfield, A.R.A., F.S.A., who has been elected President of the Royal Institute of British Architects, in succession to Mr. Leonard Stokes, was educated at Haileybury and at Exeter College, Oxford, where he obtained a first-class in *Lit. Hum.* He studied architecture in the Royal Academy Schools, and served his articles with his uncle, the late Sir Arthur Blomfield. His practice has lain principally in domestic architecture and garden designs. Some notable country houses of his are Apethorpe, Northants, and Brocklesby Park and Caythorpe, Lincolnshire. Other works are the new buildings at Haileybury College and the South African War Memorial there; the United University Club, London; Lady Margaret Hall, Oxford; and the new Paul's Cross at St. Paul's Cathedral. He is Professor of Architecture at the Royal Academy. To the literature of architecture he has contributed "The Formal Garden in England," "A History of Renaissance Architecture in England," "Studies in Architecture," "The Mistress Art," and "A History of French Architecture from Charles VIII. till the Death of Mazarin." His old college at Oxford has conferred upon him its Honorary Fellowship.

THE LEICESTER GALLERY.

At this gallery there is an exhibition of works, water-colour drawings chiefly, described as selected "with special reference to Thomas Girtin (1775-1802)." This means, apparently, that they are works of Girtin's period, intended to throw light on the state of art at that time in England. The collection has a good deal of interest. There are a number of drawings by Dayes, to whom Girtin was apprenticed as a learner, and who became his life-long enemy through jealousy of his pupil's talents. Dayes's drawings, in the old feeble "tinted" style, are mostly of landscapes with architectural ruins, not of much force or value, but one can trace in them the foundation of Girtin's style. There are a good many examples of Girtin, including a splendid little picture of Carnarvon Castle, done when near the close of his short life. There is a beautiful example of Cotman's large calm style, and a number of W. Callow's drawings, early and late; these, of course, are not among those which belong to Girtin's period; they range from 1844 to 1877.

In the inner room is a collection of paintings by Mr. Philip Connard, among which all the Still Life studies are admirable, in a very broad and bold style. The figure subjects we cannot admire.

R.I.B.A. FINAL EXAMINATION.

The Board of Architectural Education of the Royal Institute of British Architects announce that the designs submitted by the following students who are qualifying for the Final Examination have been approved:—

Subject III. (a).—E. F. Bothwell, H. C. Bradshaw, R. S. Dixon, N. A. Dod, E. Gee, T. C. Lawrence.

Subject III. (b).—H. Lidbetter, E. Prestwich, W. H. Thompson, R. A. Walter, W. E. Woodin.

UNIVERSITY OF SHEFFIELD: DEPARTMENT OF ARCHITECTURE.

The following results of the June examinations, 1912, are announced:

Diploma in Architecture.—1st class, Toothill, John C. P.; 2nd class Gibbs, Harry B. S.

Certificate in Architecture.—1st class, Odom, John H.; 2nd class, Leighton, Henry B.; Booker, George A. (on completion of design).

As the course for the diploma is a five years' one, and as the department has now been open for five sessions, the diploma in architecture of the University of Sheffield is now awarded for the first time. The External Examiner was Professor F. M. Simpson, F.R.I.B.A.

L'ECOLE DES BEAUX-ARTS.

With reference to a note in our "Paris Jottings" on June 26th, in which some awards at the Ecole des Beaux-Arts were enumerated, an Ecole student writes to point out that the medals in the Three-Arts *concours* were awarded, not for design and ornamental design, but for drawing (from the life) and drawing of ornament. He adds that as regards the "Saxon-looking names in the list," the owners were Americans, and that there are, exclusive of French Canadians, but four British subjects who are students of the Ecole.



MR. LEONARD STOKES, EX-PRESIDENT OF THE ROYAL INSTITUTE
OF BRITISH ARCHITECTS.

This portrait, painted for the subscribers by Mr. William Orpen, A.R.A., was formally presented to the Institute at the closing meeting of the session last month. As Mr. John W. Simpson said on the occasion, the portrait is characteristic of its subject in its unconventionality; the ex-President is shown in a dressing-gown!

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS.

BUILDERS' ACCOUNTS AND THE INSURANCE ACT.

In one respect the Insurance Act may prove to be a blessing in disguise for builders. It will compel them to pay more strict attention to the commercial side, and may thus lead to a much-needed bracing-up of business method. The following article will enable them to make a good start on the path of reform.

ONE of the indirect consequences of the Insurance Act will be the necessity of all employers—and especially those who are builders—keeping special books to show what amounts have been paid by themselves and what sums have been deducted from wages or salaries so far as the Insurance Act is concerned. So long as there are no disputes and no lost contribution cards, matters will proceed smoothly without any reference to accounts, but directly anything irregular occurs and reference is made by the authorities to the various employers concerned, there will be serious trouble unless very complete records exist.

There is no need to indicate contingencies which are certain to arise, sooner or later, where no special records are kept by a master builder; it is better by far to avoid the difficulties by keeping such records as will enable the matter in dispute to be settled immediately.

Properly kept books have a further advantage in that the Government will grant a rebate on the sums paid as Unemployment Insurance by the master builder, providing that he keeps his books in such a manner that the officials can satisfy themselves that a claim for such a rebate is justifiable. Thus, there is every reason why an employer should keep a proper set of books dealing solely with the requirements of the Insurance Act. If such books give him other information of value or include other information he now records, so much the better.

The Insurance Act is in two entirely separate parts, and these must be kept quite distinct from each other, or difficulties and confusion will arise. Part I. of the Act deals exclusively with ill-health, and applies (with a few exceptions) to all persons between the age of sixteen and seventy years and earning less than £160 per year or £3 1s. 6d. per week. This part is under the control of the Insurance Commissioners. Part II. deals exclusively with unemployment in certain trades, of which the building trade is one. All persons over the age of sixteen years (with a few exceptions) who are engaged in manual labour in the building trade and its associated trades are included.

In both sections of the Act, bookkeeping will be greatly facilitated if certain lists are prepared and revised each time a workman leaves or a fresh one is employed. Certain minor changes will also cause for revision as they occur.

List A.

List A consists of (a) the names of all persons employed by the firm and whose contributions to the Health Section of the Insurance Act are at the *Normal Rate*, viz., 7d. for men (3d. paid by the employer and 4d. by the man) or 6d. for women (divided equally between employer and woman). This list should also state (b) the date of birth of each person named therein, as on reaching the age of sixty-five years a man or woman must be transferred to List B. List A should also have two columns headed (c) "Employer" and (d) "Worker," respectively, and in these columns the amount of contribution from each should be stated. (It should be noticed that women office cleaners must be included.)

List A also comprises the names of all those insured under the *Unemployment Section* at the normal rate, viz. 2½d. per week each by employer and workman. This is most conveniently arranged for the building trade by means of two additional columns (e) Employer's Contribution and (f) Worker's Contribution to the Unemployment Section.

If any names are included in the Health Section and not in the Unemployment Section in List A, the letter U (uninsured) should be placed in (e) and (f) opposite to their names.

Women are apparently excluded from the Unemployment Section.

List B.

List B comprises all persons employed by the builder who are either exempt from the operation of the Act or in respect of whom the contributions are not at the normal rate. This list should have five columns: (a) Name, (b) Occupation, (c) Date of Birth, (d) Employer's contribution, (e) Worker's Contribution.

In column (d) the amount payable by the employer should be stated, or if no sum is payable the reason for exemption should be stated. Similarly in column (e) the amount contributed by the worker or the reason for exemption should be stated. (The letter placed in front of the following paragraphs may be used as a convenient indication of the reason.)

The following persons are exempted from payment:—

(A) Persons not working under a contract of service, expressed or implied. (Sch. 1.)

(B) Persons under sixteen years of age. (Sec. 1.)

(C) Persons aged seventy years or over. (Sec. 4.)

(D) Persons attaining the age of sixty-five after July 15th, 1912, but under seventy years of age, if not previously insured under this part of the Act. (Secs. 1, 4, 49.) In this case the employer pays 3d., the worker nil.

(E) Indentured apprentices or learners who receive no money payment. (Sch. 1 and Sec. 9 (4).)

(F) Children of an employer who receive no wages and persons who are maintained by their employer without wages. (Sch. 1, II. (F).)

(G) Wives employed by their husbands or husbands by their wives. (Sch. 1, II. (L).)

(H) An agent paid otherwise than by salary, unless he is mainly employed by one employer. That is a spare time agent is included, but an agent on commissions working chiefly for one employer is not exempt. (Sch. 1, II. (E).)

(I) Persons exempted by Certificate of the Insurance Commissioners on the ground (Sec. 2 and 4)

(a) That they are in receipt of £26 or upwards per annum not dependent on personal exertion ("private means" or pension).

(b) That they are ordinarily and mainly dependent for their livelihood on some other person.

In both these cases the employer pays 3d. or the special rate for those over twenty-one who earn low wages (see later).

(J) Persons engaged in other than

manual labour at a wage or salary exceeding £160 per year. Persons engaged in manual labour (such as a working foreman) must be insured even if he receives more than £160 per annum.

(K) Persons engaged casually and not for trade (Sch. 1, II. (H)), such as carrying a bag to the station, but a man who carries a door or other article used in trade must be insured.

(L) Persons exempted by Special Order of the Commissioners. (Sch. 1, II. (I).) At present none of these are employed in the building trade.

(M) Persons who have rendered no services and who have received no remuneration during a given week.

(N) Persons receiving sick benefit under the Act.

(O) Persons whose contributions have been paid for the current week by a previous employer.

The following pay special rates:—

Persons of twenty-one years of age and upwards not in receipt of board and lodging and whose wages

	Employer.	Worker.
(P) Do not exceed 6d. per day	6d. men	Nil.
(Q) Exceed 1s. 6d., but not 2s. per day	5d. men	Nil.
(R) Exceed 2s., but not 2s. 6d. per day	5d. men	1d.
	4d. women	1d.
	4d. men	3d.
	3d. women	3d.

(S) When a worker is receiving sick benefit no contributions are to be paid.

List C.

List C comprises the names of all persons exempt from the Unemployment Section of the Act and those whose rates of contribution differ from the normal one. List C should consist of five columns (a) Name, (b) Occupation, (c) Date of Birth, (d) Employer's Contribution, (e) Worker's Contribution. If no contributions are payable the reason should be stated in columns (d) and (e) respectively. The capital letters at the commencement of the following paragraphs form convenient abbreviations for the various reasons:—

(A) Persons not working under contract of service, expressed or implied. (Sec. 101 (1).)

(B) Persons under sixteen years of age. (Sec. 84, 107.)

(E) Indentured apprentices or learners who receive no money payment. (Sec. 107 (1).)

(I) Persons exempted by Special Order of the Commissioners.

(J) Persons not mainly engaged in manual labour. All managers, clerks, and draughtsmen are exempt from the Unemployment Section.

(S) When a worker is receiving sick benefit no contributions are to be paid.

(Z) For workmen aged sixteen to eighteen years only 1d. per week is to be paid by the employer and 1d. by the workman.

(Y) Men over eighteen years of age working not more than 1 day in a week pay 1d., and the employer also pays 1d. (Sch. 8.)

(X) Men over eighteen years of age working not more than two days in a week pay 2d., and the employer also pays 2d. (Sch. 8.)

(U) Persons not engaged in occupations included under the Unemployment Section. No one engaged in the following trades can be exempt in this section:—

1. Building—that is to say, the construction, alteration, repair, decoration, or demolition of buildings, including the manu-

facture of any fittings of wood of a kind commonly made in builders' workshops or yards.

2. Construction of works—that is to say, the construction, reconstruction, or alteration of railroads, docks, harbours, canals, embankments, bridges, piers, or other works of construction.

3. Shipbuilding—that is to say, the construction, alteration, repair, or decoration of ships, boats, or other craft by persons not being usually members of a ship's crew, including the manufacture of any fittings of wood of a kind commonly made in a shipbuilding yard.

4. Mechanical engineering, including the manufacture of ordnance and firearms.

5. Ironfounding, whether included under the foregoing headings or not.

6. Construction of vehicles—that is to say, the construction, repair, or decoration of vehicles.

7. Sawmilling (including machine woodwork) carried on in connection with any other insured trade or of a kind commonly so carried on.

Financial Arrangements.

The employer is in all cases responsible for the payment of both his own and the worker's contributions and may deduct the latter from wages or salary. The procedure is as follows:—

The employer must, before making any payment of wages or salary, affix to the appropriate worker's card a single National Health or unemployment stamp of the joint value of the employer's and the worker's contribution for each week or part of a week for which the wages are payable, and in respect of which a stamp has not been previously fixed. All contributions payable in respect of the period ending October 13th, 1912, must be paid by stamps affixed by that date, whether the wages for the period have been paid or not.

The number of stamps to be fixed will be the number of Mondays, for which spaces are provided on the worker's card, which fall within the period for which wages are available.

If employment begins on a day other than Monday and a stamp for that week has not already been affixed by a previous employer, the new employer must affix a stamp for that week.

If employment is likely to be regular the employer keeps the worker's cards, but must hand them to the worker on demand, with stamps duly affixed to date. On the termination of employment the worker must demand his card duly stamped.

After each stamp has been affixed it must be cancelled by the employer writing the date to which it corresponds in ink across it.

As under the Insurance Act each week commences on a Monday it will save a large amount of trouble if wages are calculated accordingly, no matter what day of the week they may be paid. Thus, if

wages are paid on a Friday night or Saturday noon, the amounts should be for the previous week (Monday to Sunday). If the week is made to begin on any day other than Monday, it will be necessary to adjust the accounts so as to correspond with the wages, and this will, to a large extent, mean double entries. Thus, if the present pay-week ends on a Thursday and the men receive their wages on a Saturday noon, then, if a man, who has not worked during the Monday, Tuesday, Wednesday, or Thursday, is started on a Friday and works the Saturday, Monday, and Tuesday following, *two* contributions will be payable by both employer and worker (*a*) for the week commencing Monday, though the man only worked Friday and Saturday in that week and (*b*) for the week commencing the following Monday, though the man only worked Monday and Tuesday that week. It is true that in the Unemployment Section specially low rates are enforced under such conditions, but the double contribution is very puzzling to most workers, and is better avoided by making the pay-week commence first thing on Monday morning so as to be in accordance with the Insurance Act. This saves a large amount of calculation, and it can be arranged by most builders without serious difficulty.

Wages Book.

From Lists A, B, and C it should not be difficult to compile a wages book on the ordinary plan, the names of the workers following each other down the page and a sufficient number of columns being provided to meet the requirements of the Act.

The following columns will be required, and as the ruling is troublesome it is better to purchase a book ready ruled for the purpose.

Column 1.—No. of worker.

Column 2.—Name.

Column 3.—Occupation. (This may be omitted if desired, as it is already included in Lists A, B, and C.)

Columns 4-10.—Days of week, with hours worked in each. If the worker is away ill, write "Ill" in day column; if he has left, write "Left" and the date.

Column 11.—Total hours worked.

Column 12.—Rate of pay per hour.

Column 13.—Total wages earned.

These thirteen columns represent the ordinary wages book. They should occupy the left-hand page of the book. The right-hand page should have the following columns:—

Columns 14 and 15.—Worker's contributions to Health and Unemployment Sections, respectively. These amounts must be ascertained by reference to Lists A, B, and C. (Where the persons named in the wage book are exempt from paying, the capital letter indicating the reason for the exemption should be written in the appropriate column.)

Column 16.—This is obtained by adding the figures in columns 14 and 15.

Column 17.—This is obtained by subtracting the amount in column 15 from that in column 13.

Columns 18 and 19.—Employer's contribution to Health and Unemployment Sections, respectively. These amounts must be ascertained by reference to Lists A, B, and C. Where the employer is exempt from contributing, the capital letter indicating the reason for the exemption should be inserted in the appropriate column.

Column 20.—This should be used for notes respecting date of leaving, number of contributions paid (for rebate purposes), or any other information it may be desirable to record.

To Use the Wages Book.

The wages book will necessarily be rather large (about 13 in. by 8 in.), and it may be convenient to keep a smaller time book for entering particulars as to hours worked. These should, however, be copied into the larger book as soon as possible, so that all the particulars are contained in one volume.

As soon as a man is engaged he must hand his Insurance Card and Unemployment Card (if any) to the wages clerk, who will see that they are in order, or will enter the irregularities of importance in a special book kept for the purpose. The cards are then put in a place of safety, where they can be readily found.

If the man is a casual worker, likely to leave after a few hours, the wages clerk should note whether he has previously been employed that week, and if not, the clerk should affix a stamp to each card in accordance with the amount payable, and will at once enter the corresponding amounts in the wages book. He may then either retain the card in a special case until the man leaves, or he may hand it back at once to the worker.

If the worker is likely to be permanent, the wages clerk places the card with those of other permanent workers.

At the end of each week (though actually this will usually be the beginning of a fresh week) the wages clerk will enter the wages and contributions in the appropriate columns of the wages book, and will then fix the necessary stamps on each of the cards, cancelling each stamp by writing the date across it. To save time the date may be printed with a rubber stamp.

If men are paid off at any time before the wages book is made up, the amounts paid and deducted must be entered in the wages book before the cards are stamped, and then the cards, duly stamped, must be handed to the workers with the balance of wages.

To facilitate the handling of the cards these should be folded inside out and placed on edge in a suitable drawer, the cards being in alphabetical order with the names uppermost. Index cards, with the letters of the alphabet, may be inserted for quicker reference. No marks are to be made on

PART OF SPECIMEN PAGE OF WAGES BOOK.

No.	Name.	Occupation.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Sunday.	Total Hours.	Rate.	Total Wages.	Worker's Contributions.			Total Deductions.	Nett Wages.	Emplr's Contributions.		Notes.		
													Health Section.	Unem- ploy- ment.				Health Section.	Unem- ploy- ment.			
1	James Smith	...	Bricklayer	...	—	—	9	9½	9½	5	—	28	10	£1 3 4	d.	d.	d.	—	£1 2 9½	d.	d.	{ Left 20/7/12
2	Chas. Shaw	...	Labourer...	...	9½	9½	9½	9½	9½	5½	—	53	6	£1 6 6	4	2½	6½	—	£1 5 11½	3	2½	
3	Mike Toll...	...	Labourer...	...	9½	8	8	8	8	8	—	9½	6	£1 4 9	4	2	6½	—	£1 5 11½	3	2½	
4	John Jones	...	Clerk ...	...	8	8	8	8	8	3	—	43	10	£1 15 10	B	U	—	—	4 4½	3	1
5	Robt. Innes	...	Manager ...	...	—	—	—	—	—	—	—	£4	£4	0 0	U	U	—	—	10 0	B	U

the cards so that an alphabetical arrangement is the only one possible. Great care will be needed not to give a man the wrong card, especially where there are several men of the same name and occupation.

Once the clerk becomes accustomed to the work, the additional labour entailed will not be so great as appears at first sight; the chief trouble will be with casual labourers. Assistance with the latter can be obtained from the Labour Exchanges, who will, under certain conditions, undertake the stamping of the books.

Rebates.

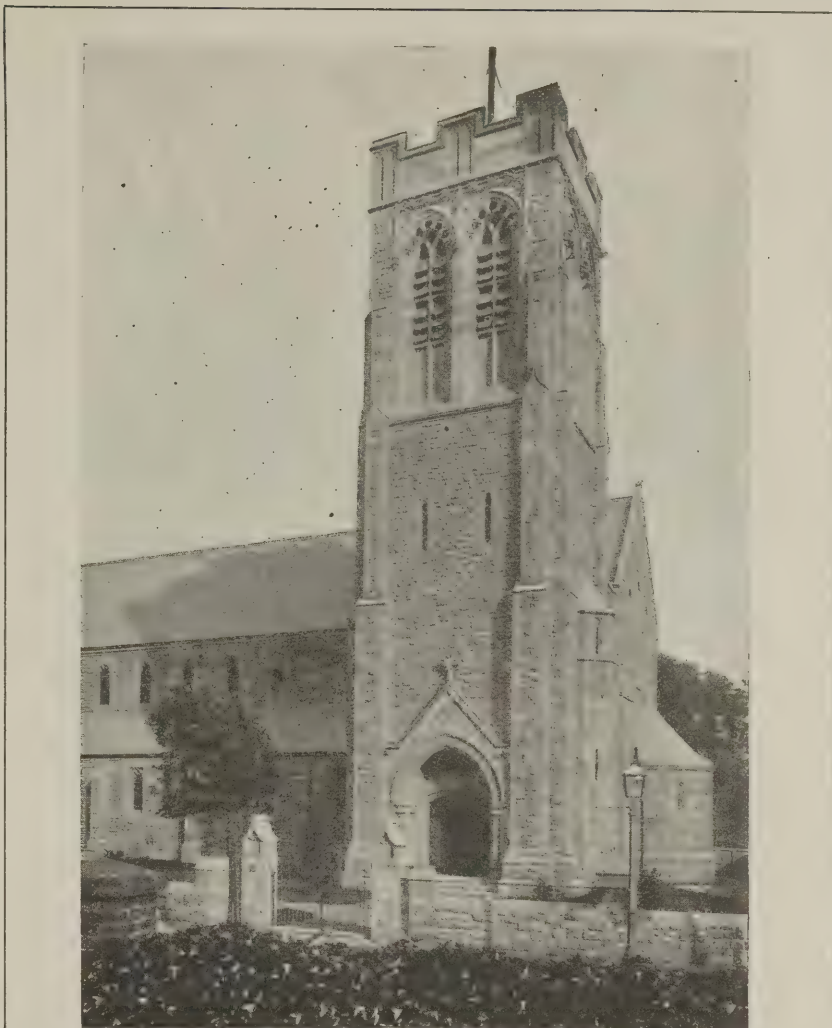
By Section 96 an employer, whose workmen during a period of depression have been systematically working short time, and who satisfies the Board of Trade that he has paid his own and the workmen's contributions without deducting the latter, may claim a return of such unemployment contributions as the Board of Trade may decide. By Regulation 25 the Board of Trade will, if asked, state what amount (if any) will be refunded if the employer applies before putting his workers on short time and stating the circumstances and his proposals as to hours, etc. Application must be made on Part II. of Schedule III. of the Regulations.

By Section 94 (1) an employer who has made not less than forty-five contributions to the Unemployment Section in respect of any one worker who has been continuously in his service for a period of twelve months shall be entitled to a refund of one-third of the contributions paid by him on his own behalf in respect of such workman. The period of twelve months must end July 14th in any year. Application must be made to the Board of Trade.

Doubtful Cases.

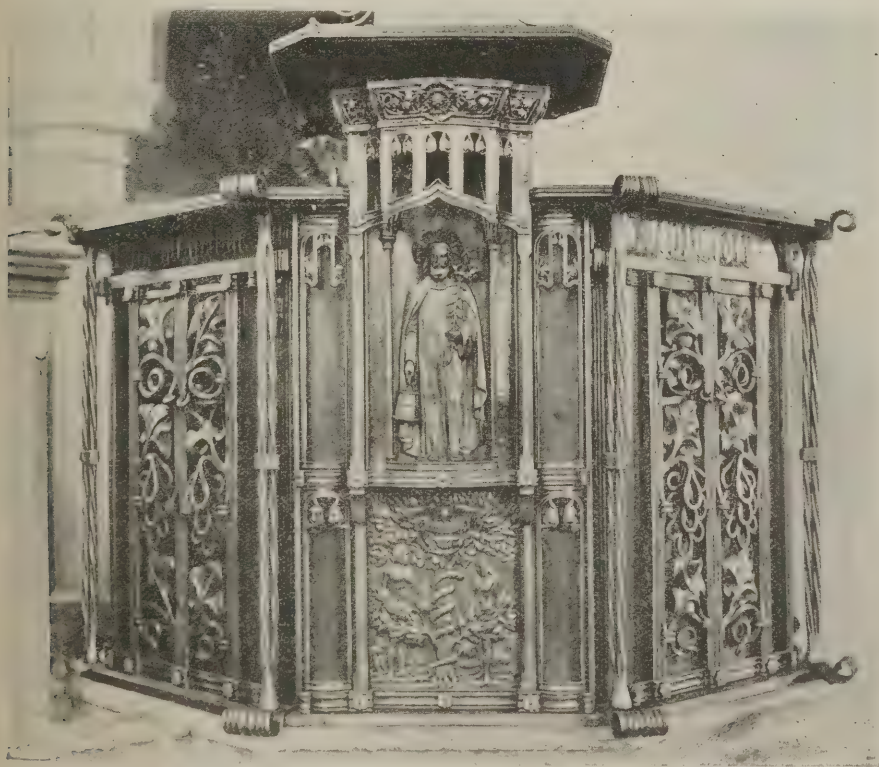
When an employer is uncertain as to whether a worker is or is not in an insured trade, he may apply to the Board of Trade on a printed form for an Umpire's decision on the matter.

As amounts paid in error will be refunded on application under Regulation 31,



ALL SAINTS' CHURCH, EALING: TOWER ENTRANCE.

WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.



ALL SAINTS' CHURCH, EALING: PULPIT (METAL AND ENAMELS)

BY NELSON DAWSON.

it is better to pay in doubtful cases, and to claim a refund later.

Where other cases of doubt arise, the Act itself and the Regulations in connection with it should be consulted.

ALL SAINTS' CHURCH, EALING.

This church has been built through the munificence of the late Miss Frederica Elizabeth Perceval, in memory of her father, the Right Hon. Spencer Perceval, who was Prime Minister in 1809-1812. The most striking feature of the exterior is the great arch and recessed east window, flanked by two turrets. At the west end is a detached tower. Internally, the proportions are very pleasing to the eye, and as there is no chancel arch, an unbroken length of roof from east to west is secured. There is a fine metal pulpit, with symbolic figures of Adam and Eve, surmounted by a figure of Christ; this pulpit, together with the lectern, being the work of Mr. Nelson Dawson. The choir and clergy stalls are richly carved, and similar handiwork is displayed in the tracery to the Holy Table. Noteworthy, too, is the bishop's chair (shown on page 27), a well-designed piece of church furniture made by Mr. Alexander G. Lee. The chancel is paved with marble, and its walls are covered with alabaster. The arches here are filled with wrought-iron screens, decorated with gilding, and panels of rich



ALL SAINTS' CHURCH, EALING: GENERAL VIEW FROM SOUTH-WEST.
WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.

marble with glass mosaic borders are introduced into the sacrum. At the west end is a font of Caen stone, with symbolical carvings and angels.

A pine dado is fixed around the walls, the benching is of oak, and the aisles are laid with teak blocks. The vestries are spacious, the clergy vestry being large enough for use as a song-room and for small parochial meetings. Heating is by low-pressure hot water.

The architect of the church was Mr. William A. Pite, F.R.I.B.A., of London.

Messrs. Dove Brothers were the builders, and Messrs. Norman and Beard installed the organ. The total cost was £13,600.

PROPOSED MUNICIPAL WORKS.

The Local Government Board have decided to hold, or have recently held, as the subjoined dates indicate, inquiries into proposed expenditure by public bodies as follows: Sewerage, drainage, sewage disposal works.—Dunmow R.D.C., £6,400 (July 10); Norden U.D.C., £1,109 (July 9); Ashton-in-Makerfield U.D.C., £23,319 (July 10); Hay U.D.C., £4,000 (July 12). Street improvements, new roads, recreation grounds.—Willesden U.D.C., £2,053 to £19,288 (July 9); Ipswich B.C., £1,300 (July 11); Southall-Norwood U.D.C., £4,398 (July 12); St. Helens B.C., £8,598 (including £7,000 for culverting Windle Brook) (July 12); Southend-on-Sea B.C., £4,769 (July 9). Various.—Plymouth Corporation, £2,800 for bathing pool (July 11); Shanklin U.D.C., £1,500 for adaptation of Literary Institute for Council Offices (July 9); Bournemouth B.C., £12,170 for Law Courts (July 10); Kenilworth U.D.C., £3,700 for cemetery (July 9); Willesden U.D.C., £2,541 for public conveniences (July 9); Gloucester City Council, for fire station, no amount specified (July 10); Ramsgate B.C., £4,178 for shelter and lavatories (July 12); Weymouth and Mel-

combe Regis B.C., £7,500 for electricity undertaking (July 11); Southall-Norwood U.D.C., £1,250 for open-air swimming bath (July 12); Ashbourne R.D.C., £1,030 for housing (July 11); Buckingham R.D.C., £1,200 for ditto (July 15).

LEGAL.

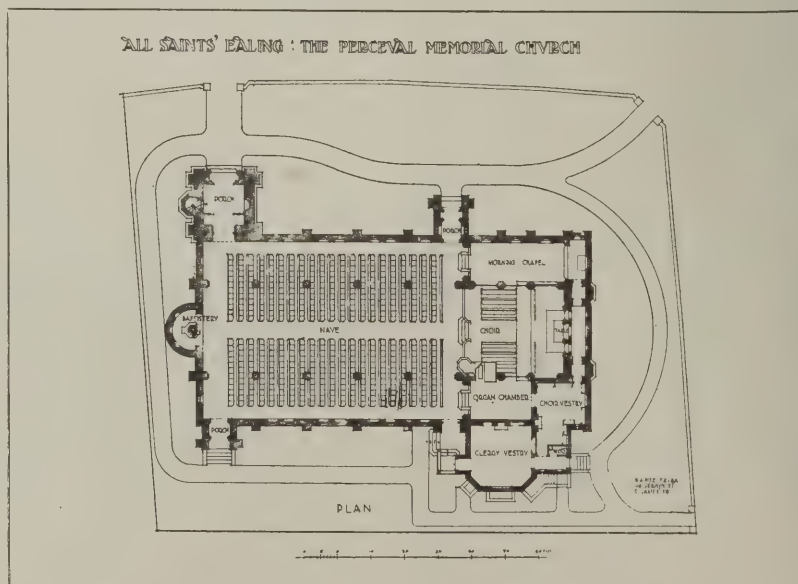
Six Properties or One?

At North London, Mr. Hawes, on behalf of the London County Council, applied to Mr. Hedderwick under the Lands Clauses Act to fix the apportionment of the ground-rent of a portion of the property required for the enlargement of the Sigdon Road Council School, Dalston Lane.—Sir Denham Warmington argued that the Council must take the whole and not a portion only of the property.—Mr. Hawes said that was a matter with which the High Court must

deal.—Sir D. Warmington said that, if an apportionment had to be made, both sides admitted that £5 10s. was a fair sum, but it must be clearly understood that this order did not prejudice the High Court action, as the Act provided that no owner could be compelled to sell a portion only of a single property.—Mr. Hawes: We say these six buildings are six different properties.—Sir D. Warmington: We say that they are one, and covered by one lease and one ground-rent.—Mr. Hedderwick then apportioned the rent on the house required by the Council at £5 10s.

Reinforced Concrete Boats!

It is reported that a company has been formed in Antwerp recently to work a patent for the construction of reinforced concrete boats. It is proposed to erect the works at Ghent.



FORTIETH CONGRESS OF FRENCH
ARCHITECTS.

The fortieth annual congress of French architects was opened on June 24th, at the premises of the Société Centrale des Architectes Français, in the Rue Danton, but some of them were held at the Ecole des Beaux-Arts, where, for example, M. Louis Dausset led a discussion on "The suppression of the fortifications, and the utilisation of the military zone." For six years M. Dausset has taken a prominent part in the agitation for the removal of the Paris ramparts and those of the zone; and that his strenuous advocacy has not lacked the saving grace of humour may be inferred from his citation of this rather elaborately constructed pun:—

"Le mur murant Paris
Rend Paris murmurant."

To this kind of play upon words the French language lends itself with fatal facility, M.

sions to Larchant and Château-Landon. On the following morning, M. Lemonnier, Professor at the Sorbonne and at the Ecole des Beaux-Arts, lectured on "The De Maintenon Aqueduct and the Académie Royale d'Architecture (1684-5)." In the afternoon visits were paid to notable buildings of recent construction in Paris—for instance, in the Boulevard Haussmann (M. J. Mermant, architect), in the Rue des Italiens (M. Arnaud), and in the Rue de Hanovre (M. F. Bocage).

The fourth day was taken up (1) in the reading of a communication by M. Paul Guadet on "Le Recrutement des Experts," in which he advocated more systematic selection by the architectural societies of expert advisers for the various legal tribunals; and (2) in the discussion led by M. Bonpaix on a communication from M. G. Olive on the perennial and inexhaustible topic of architectural fees.

On the morning of the fifth day M. G. Ernest led a discussion on the now burn-

silver medal for "jurisprudence" is awarded to M. Defrasse (Paris); the Prix Dejean (grand silver medal) to M. Hébrard (Paris) for his studies of the palace of Diocletian at Spalatro; and the gold médaille d'honneur goes to M. Nizet, of Paris. Grand silver medals for students at the Ecole des Beaux-Arts go to M. Haffner, pupil of M. V. Laloux, and to M. Potier, pupil of the redoubtable M. H. Deglane, whose pupil M. Madeline receives the grand silver medal in the private schools of architecture section.

THE FORTHCOMING PARIS
EXHIBITION.

The Exposition Internationale des Arts du Travail, which is to be opened at the Grand Palais, Paris, in August, is to have a strong building trades section, over the various classes of which men of note in



ALL SAINTS' CHURCH, EALING: THE EAST END. WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.

Dausset's quotation recalling, for instance, the schoolboy cynic's definition: "Un homme sans souci est un homme sans six sous." Ten years ago the city seemed to have come to an understanding with the State on this matter, but as yet nothing had been done; and the jealous care with which the ruined huts on the zone are being preserved appears to M. Dausset to be very pathetic. He is not without hope, however, that the fortifications will shortly disappear, freeing Paris "from this yoke of a former age."

The third day was given up to excur-

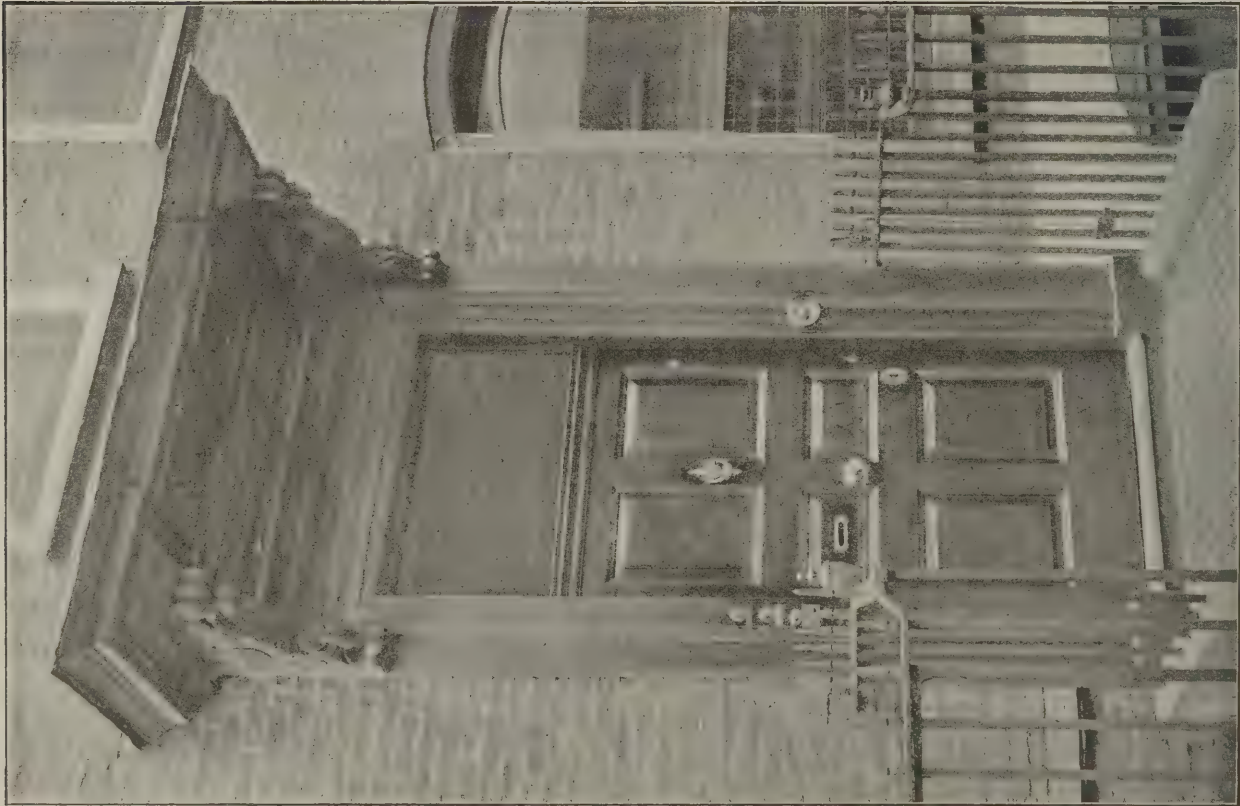
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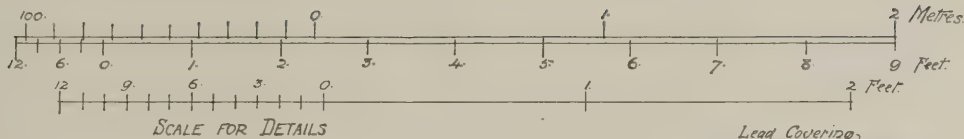
On the morning of the fifth day M. G. Ernest led a discussion on the now burn-

ing topic of cheap dwellings; and in the afternoon the equally current, if somewhat threadbare, subject of apprenticeship. The sixth and last day saw in the morning the usual winding-up meeting (séance de clôture); in the afternoon the formal presentation of the long list of awards, and in the evening the banquet at the Palais d'Orsay. A few extracts from the list of awards may prove interesting: For "architecture privée," a "grand silver medal each is awarded to M. Deglane (Paris), M. Roussi (Paris), and M. Petit (Versailles). The

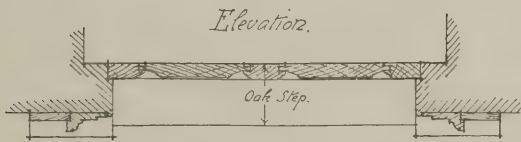
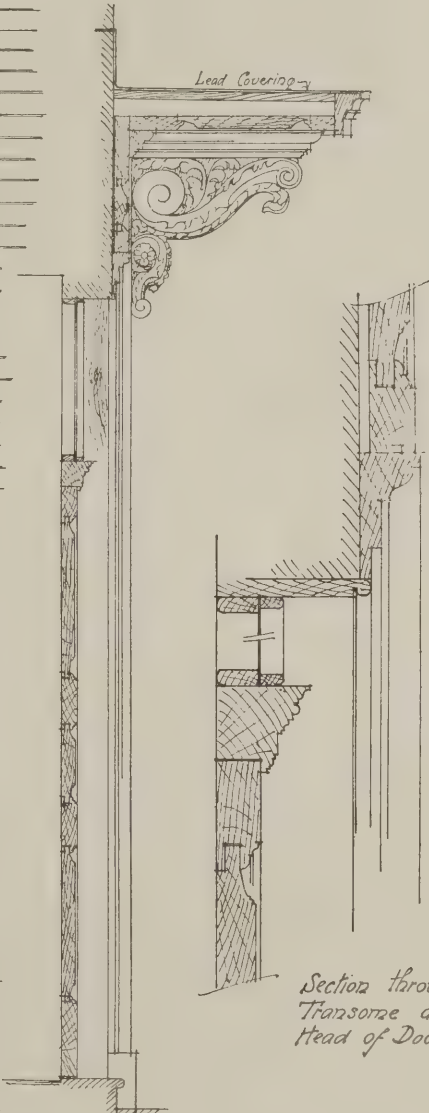
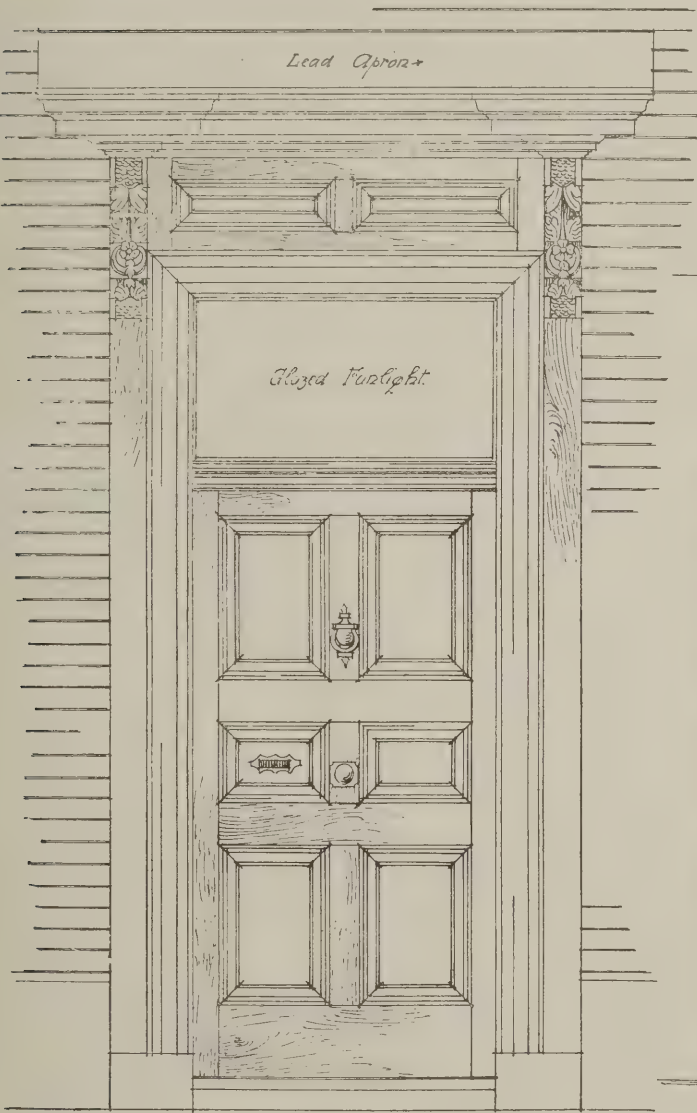
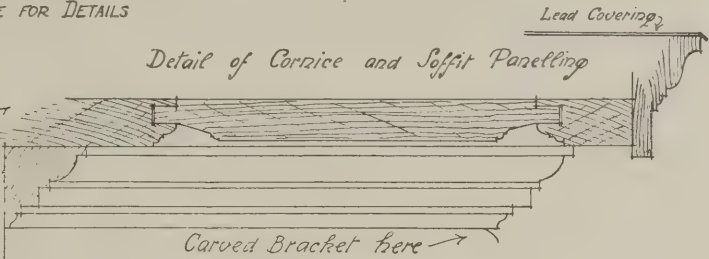
their several departments will preside. Everything pertaining to the industry will be represented, and the housing department is to be rendered particularly interesting and instructive by the comparison it will afford between the old-fashioned house, unhygienic and comfortless, and the modern house, comprising every article of faith in the up-to-date conception of the ideal home. The bureaux of the exhibition are at 72, Rue Saint Lazare, Paris. The address may be useful to intending exhibitors, as we believe that it is not yet too late to obtain space.



DOORWAY, No. 29, GREAT JAMES STREET, W.C.



A DOORWAY AT
29 GT JAMES
STREET W.C.



Plan

MEASURED AND DRAWN BY JOHN L. BERRY.

PROTECTION OF ANCIENT
BUILDINGS.

Mr. Thackeray Turner presided last Wednesday at the general meeting of the Society for the Protection of Ancient Buildings, held at Burlington House.

The Rev. Gerald S. Davies, the Master of Charterhouse, read a paper, in which he said it was to members of his profession that a very large amount of the restoration which had led to the disappearance of our most venerable and lovable landmarks was due. No doubt it was due to the best intentions in almost every case; it was done often at great pain and self-sacrifice; but in the doing of it there had been taken away from them and all generations to follow visions the most precious that had been bequeathed to the human race. The doing of it had quenched for many the light of memory, and above all had unwittingly taught a lesson of irreverence which this age could ill afford to learn. He did not make any claim for a cathedral more than for a castle. His appeal was rather on behalf of a broader, more abstract, more universal quality of reverence which was implanted in every human being in a greater or less degree. The restorative effects left ancient buildings no longer able to awaken the old love and that indescribable set of feelings which came to them when they set foot in some well-known cathedral. A scraped-up restoration was no more able to call up those feelings than would the wax-work figure of a mother if her son saw it on a chair by the fireside.

IMPROVED METAL LATHING FOR
PLASTERWORK.

The Expanded Metal Co., Ltd., of York Mansion, York Street, Westminster, London, S.W., and Stranton Works, West Hartlepool, has succeeded in producing a new and improved diamond mesh expanded metal lathing, which will be obtainable at prices lower than those for the original expanded metal lathings. The new lathing is made under a recently patented process. It will be known by the trade name of "BB Expanded Metal" Lathing, and the illustration accompanying the firm's advertisement appearing in the present issue shows the actual size of its meshes. It is made in standard size sheets, 9 ft. long by 2 ft. short-

way of mesh, which is an increase of 1 ft. in length as compared with the original lathings.

"BB Expanded Metal" lathing has several important advantages over the original expanded metal lathings. First and foremost, its cost is less; then it may be used at wider spacings, and it requires less plaster.

Several practical tests have been made under ordinary working conditions by well-known expert plasterers, who have used many thousands of yards of the original lathings, and their reports all agree that not only is the new lathing stronger and stiffer than the original lathings, but that on account of the reduced size of the diamond mesh, together with the improved slope of its strands, less plaster goes through to form the "key" and practically none falls off and is wasted.

"BB Expanded Metal" lathing is now ready for the market, and as it is sold through the merchant trade only, stocks will be held in most large centres. It is listed in three gauges, thus: BB 26-gauge Expanded Metal Lathing; BB 24-gauge; and BB 22-gauge.

Reference to the price list issued by the Expanded Metal Co., Ltd., shows that, gauge for gauge, a saving of from 25 per cent. to 60 per cent. is made by substituting the new lathings for the old. But the saving in cost is really more than the difference between the price-list rates for equivalent gauges, because of the wider spacings that may be used with the new lathings. To take one gauge only—in the original lathing, No. 1, 24-gauge is not recommended for spacings over 12 in., whereas "B" 24-gauge may be used for spacings up to 15 in. in ordinary horizontal or sloping work and up to 18 in. in ordinary vertical work. Tests have been made at these spacings with entirely satisfactory results, both with ordinary lime and hair mortar and with special quick-setting plaster, and these facts should produce a large demand for the new lathing.

NATIONAL FEDERATION OF BUILD-
ING TRADES EMPLOYERS OF GREAT
BRITAIN AND IRELAND.

The summer meetings of the Federation this year will be held at Nottingham, doubtless in compliment to the President, Mr. James Wright, who is a member of the Nottingham Association. The pro-

ceedings open on Tuesday, July 30th, at 2.30 p.m., with the meeting of the Executive Council, to be held in the Exchange Hall. At seven o'clock on Tuesday evening, the dinner will take place at the Victoria Station Hotel. On Wednesday, at 10 a.m., the Mayor of Nottingham (Councillor Edwin Mellor) will hold a reception in the Exchange Hall, where, beginning at about 10.15, the general meeting will be held. After lunch there will be a reception (at 4 p.m.) by the Sheriff (Councillor John Pycroft) at Nottingham Castle, which members will inspect, and where music and afternoon tea will be provided. Thursday will be devoted to a picnic in Sherwood Forest.

DETAILS OLD AND NEW.—XLVI.

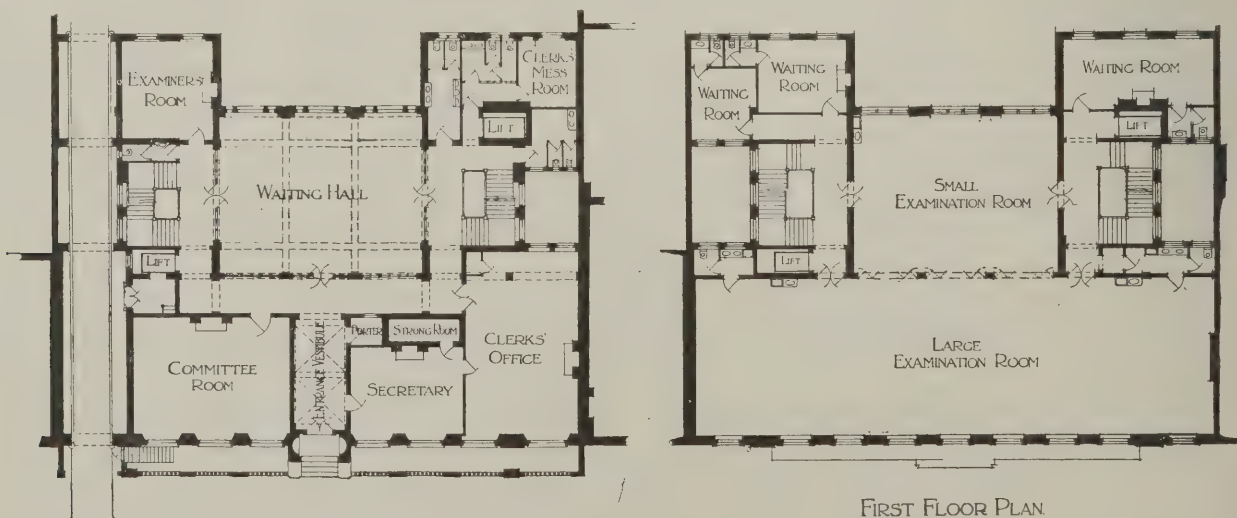
Doorway, Great James Street, London.

The bare fronts of the houses in Great James Street, London, W.C., are relieved by a regular series of old doorways of the type shown by the illustrations on the two preceding pages. These doorways are of good proportions, and have well-carved brackets. They date from the late eighteenth century.

OUR PLATE.

New Examination Hall, Queen Square, London, W.C.

The new examination hall of the Royal College of Physicians and Surgeons has been completed recently on a site on the west side of Queen Square, Bloomsbury, London, W.C., from designs by Mr. Andrew N. Prentice, F.R.I.B.A. The façade is very imposing, and embraces some excellent design in brickwork. The building supersedes the examination hall and premises of the Imperial Cancer Research Fund on the Victoria Embankment. The basement consists of cloak-rooms and accommodation for the caretaker. On the ground floor are a large waiting hall, committee room, and offices for the secretary and clerical staff; on the first and second floors are examination rooms; on the third floor are the physical, anatomical, and chemical examination rooms; while the fourth and fifth floors are occupied by the Imperial Cancer Research Fund. Messrs. Holland and Hannen were the builders.

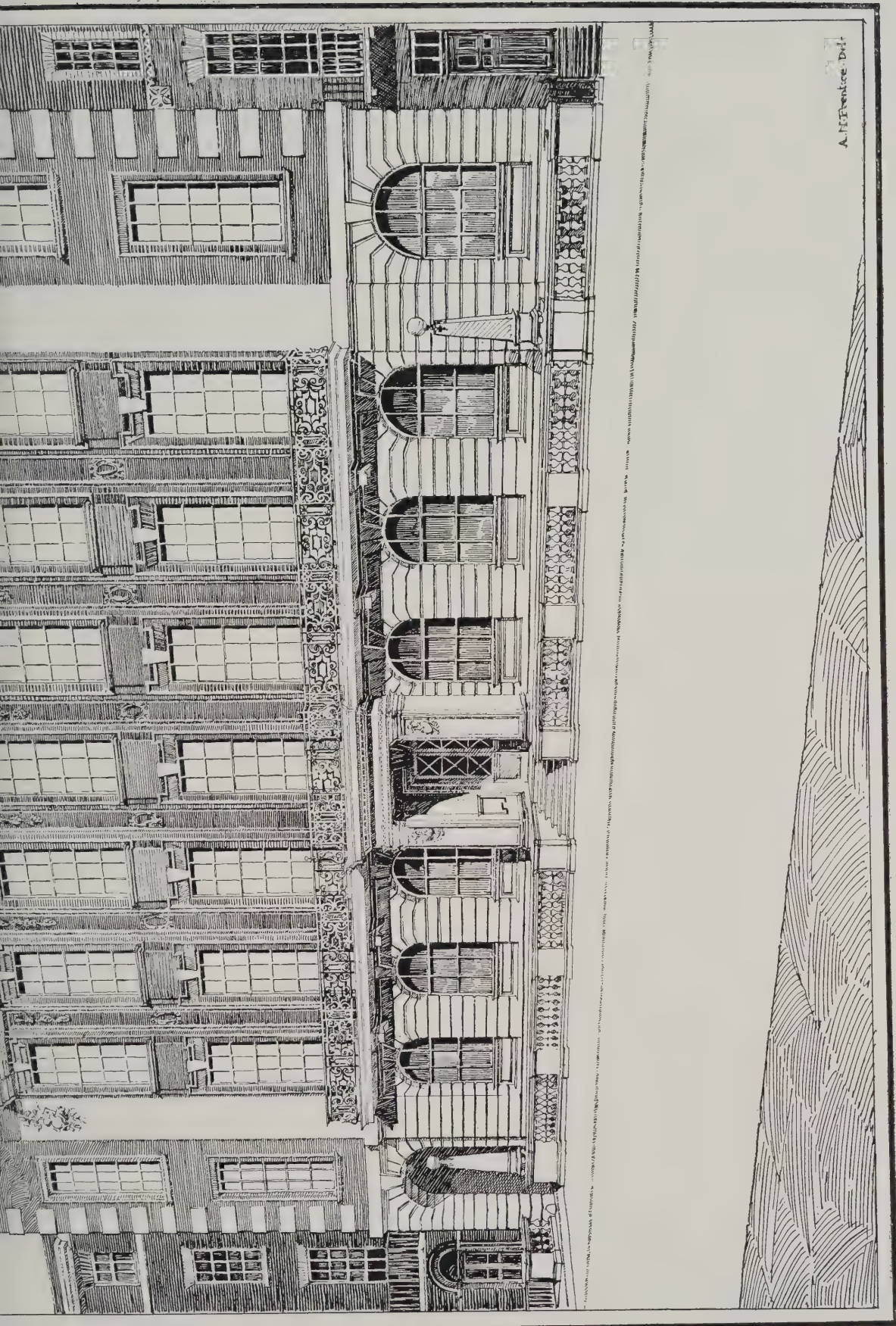


FIRST FLOOR PLAN

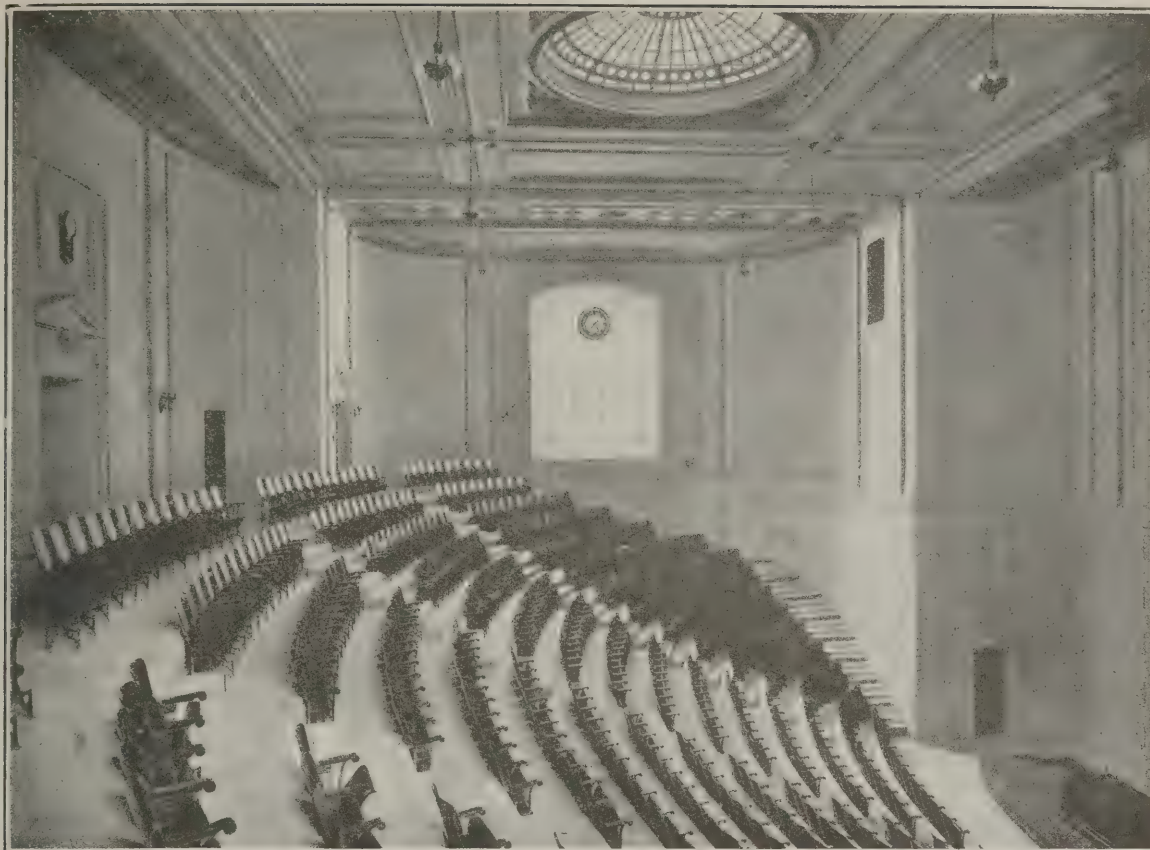
NEW EXAMINATION HALL FOR THE ROYAL COLLEGE OF PHYSICIANS AND SURGEONS, QUEEN SQUARE, BLOOMSBURY, LONDON, W.C. ANDREW N. PRENTICE, F.R.I.B.A., ARCHITECT.

PERSPECTIVE VIEW





NEW EXAMINATION HALL FOR THE ROYAL COLLEGES OF PHYSICIANS AND SURGEONS, QUEEN SQUARE, BLOOMSBURY, LONDON, W.C.
ANDREW N. PRENTICE, F.R.I.B.A., ARCHITECT.



LECTURE HALL, TECHNICAL TRAINING SCHOOL, MONTREAL. SAXE AND ARCHIBALD, ARCHITECTS.

This is an excellent example of a modern Lecture Theatre, the acoustics of which have proved to be very satisfactory.

PARIS JOTTINGS.

La Place de l'Hotel de Ville.

M. Le Corbeiller, municipal councillor, has put forward a plan for the improvement of the "Places" of the Hotel de Ville and Lobau. With regard to the Hotel de Ville "place," he proposes the erection of three monumental façades, with turrets. In the Place Lobau, existing buildings would be superseded by galleries leading to the Hotel de Ville, and the general appearance of the Place Lobau would thus become somewhat assimilated to the Carrousel or to the Court of the Louvre. The cost is estimated at ten million francs, but the suggested essay in monumental town planning would seem to be worth the money. Probably the interference with the aspect of the Hotel de Ville will arouse a certain amount of opposition, although the building dates no farther back than the 'seventies of the last century, for the old building, begun in 1533, interrupted by the wars, and not completed until 1628, enlarged in 1801, and again in 1836-42 at a cost of £1,600,000 sterling, was destroyed by the Communists in 1871. The new building, however, is distinctly in the grand manner, and is worthy of the better environment that M. Le Corbeiller is anxious to provide for it, though at best it must continue to suffer in comparison with the Louvre and the Carrousel, as seen in succession in a journey along the river.

"Grève" and Strike.

Paris is justly proud of her "Places," of which she has about half a hundred, of varying degrees of dignity, and the exact distinction between a Place and a Square would be rather difficult to define. The Place de l'Hotel de Ville has a rather curious interest for builders. It was formerly called the Place de Grève—grève

corresponding in meaning to the English word "strand." Then why should a strike be called a "grève"? Because, by ancient custom, the Paris masons and bricklayers made this sandy strand their meeting-place. They met there not only to find employment, but to confer about, and frequently to strike against it—so frequently as to associate "grève" with "strike" until the words became synonymous. Possibly—but this is merely conjecture—this sinister perversion of meaning may have determined the alteration of the name; but, seeing the fondness of Parisians for changing the names of their localities on the smallest provocation, an explanation in accordance with any other theory seems quite superfluous. But it is curious that while the French have their own word for "strike," they lack a native term for its converse, and are driven to speak of "le lockout," and of "les lock-outés," a hybrid that is always sure of the "glad eye" of an English reader, but which, as pronounced in France, he would find some difficulty in recognising with certitude.

Clodion Comes to His Own.

Clodion has been discovered, and has posthumously come to his own. Born at Nancy in 1745, he died in 1814, and during at least forty years of tremendous industry he produced thousands of little masterpieces of modelling—busts, statuettes, bas-reliefs—and was glad to get fifty francs apiece for them. To-day they are fetching fabulous prices at sales—such of them as have survived the wholesale destruction that must have occurred in ignorance of the preciousness with which a change of taste would some day suddenly invest them. Rich Americans, it appears, are willing to pay extravagant sums for signed Clodions, of which, it is supposed, a good number must still be in existence in country houses, the proprietors unaware of

the fortunes they could realise on the unregarded little images with which the neglected genius decorated their walls and ceilings. Copies of Clodion's flighty little statuettes, reproduced in various materials, but perhaps most often in bronze, have been for some time popular in London as well as in Paris.

The Paris Observatory Obsolescent.

The Minister of Public Instruction has under consideration a project for the transference of the observatory to some situation that is more remote from the trepidations that interfere with the efficiency of its instruments. The building, which, rectangular in form, is situated in a line directly south of the Luxembourg Gardens, was carefully oriented so that its four walls should exactly face the four cardinal points. It was begun in 1668, and finished in 1671, at a cost of two million francs. Claude Perrault, to whom we owe the colonnade of the Louvre, was the architect. The outside walls are 6 ft. thick, and stand 28 metres both above and below the ground. The two low wings were added in 1834. The main building will remain in use as a museum—a purpose that it has long served in a rather half-hearted way, the public being admitted somewhat grudgingly—but its surroundings will be considerably modified. Two new streets will cut through the avenue near the statue of Le Verrier, and a score or so of new buildings will be put up, while a possible development of the scheme will be the formation of a new square near the Boulevard Arago. The grounds surrounding the Observatory will thus in a great measure become obliterated, and the money derived from their sale will be applied to the erection and equipment of the new observatory, which will be built on some site, as yet undetermined, at a sufficient distance from traffic vibrations.

NEWS ITEMS.

Business Appointments.

Mr. Alfred J. Dearberg and Mr. Frederick Forbes have been appointed joint managing directors of Measures Brothers (1911), Ltd., iron and steel contractors and engineers, Southwark Street, S.E.

Two New London Statues.

A monument is to be erected to Captain Cook, the discoverer of Australia, on the west side of the Admiralty arch, and a bronze statue of Lord Clive is to be erected temporarily in the garden attached to Gwydyr House, Whitehall; afterwards it is proposed to remove it to the west end of King Charles Street.

Australian Offices on the Strand Island.

Drawings of the elevations of the proposed buildings to be erected on the site acquired by the Commonwealth of Australia between the Strand, Aldwych, and Melbourne Place have now been submitted to the London County Council. The buildings follow the scheme outlined by Mr. Norman Shaw, R.A., when the Victoria Government building was erected.

A Fatal Scuffle.

At Salop Assizes on July 1st a wheelwright named Davis was sentenced to five years' penal servitude for the manslaughter of his master, W. W. McLeod, builder and contractor, of Salop. Davies and McLeod had words, following which McLeod, a big, powerful man, put Davies off his premises. Davies then challenged McLeod to fight, but the latter returned to his work. When followed by Davies, McLeod took off his coat and put Davies down. Being released, prisoner seized an iron bar, striking McLeod and fracturing his skull, from which injury he died three days later.

Ancient Glass in a Norwich Church.

Some beautiful old glass in St. Andrew's Church, Norwich, which stood originally in the east window, was, about fifty years ago, removed and placed in the clerestory windows, where it was both unseen and unprotected. During the extensive repairs now in progress in the church the old glass is being repaired and protected and placed where it can be better seen. There are six panels in all, but only three show a subject at all complete. Of these the first contains Moses holding up the brazen serpent; the second shows Abraham and Isaac ascending the mount; and the third has a representation of Death and the Bishop from "The Dance of Death." The other three panels are composed mainly of fragments with coats of arms. There is the mark of Nicholas Collick, Mayor of Norwich in 1497.

Dresden International Congress on Art Education.

The Administrative Committee of the International Congress on Art Education, Drawing, and Art, as applied to industries, have applied to the London County Council to take part in the fourth international Congress, which will take place at Dresden in August, 1912. The object of the congress is to place the teaching of art and drawing on a sound basis, and to prove the value of drawing in general education as well as for professional use. The exhibition to be held in connection with the congress is under the patronage of H.R.H. Prince Johann Georg Herzog zu Sachsen and an influential international committee. The Education Committee of the London County Council understand

that a suitable exhibit can be collected at a cost not exceeding £50, but as the expenditure involved in the proposal is in respect of an exhibition held outside the County of London, it will be necessary to obtain the consent of the Local Government Board, under the provisions of the Local Authorities (Expenses) Act, 1887. The committee propose that the exhibit shall be lent for the purposes of the exhibition, and that it shall be returned to the Council at its close.

Tribunal of Appeal—Remuneration of Members.

In accordance with a resolution of April 30th, 1912, by the Building Acts Committee of the London County Council, it was suggested to the Secretary of State for the Home Department that the remuneration for the year 1912 of the members of the Tribunal of Appeal constituted under the London Building Acts should continue to be on the scale laid down in 1895 and extended in operation until the end of the year 1911. The Secretary of State has decided that for the year 1912 the remuneration shall be on the same scale as heretofore, viz., for each member of the tribunal, three guineas for the first hour and two guineas for each subsequent hour of each day's sitting.

Irish Antiquaries and Dr. Petrie.

At a meeting of a committee of the Royal Society of Antiquaries, Dublin (G. N. Count Plunkett, K.C.H.S., in the chair), it was decided to arrange for a popular lecture, to be given in the coming autumn, descriptive of the life and works of Dr. Petrie, and detailing his great services to Irish archaeology, in particular in laying the foundations of our present knowledge of early Irish architecture. The Right Hon. M. F. Cox consented to deliver the lecture, and the Lord Ardilaun was invited to take the chair on the occasion. It was subsequently decided to widen the scope of the project so as to include the erection of a bust and suitable inscription or other worthy monument in some public place, in addition to the erection of a monument over the grave of Dr. Petrie.

King's College, London, Building Developments.

Speaking on Commemoration Day (July 3rd) at King's College, London, the Principal, the Rev. Dr. A. C. Headlam, said that, with regard to the development of the college, they hoped to build next year, for their theological and other students, on an admirable site in Vincent Square, a hostel where they would be able to enjoy all the advantages of common and corporate life. The future of the college was a very difficult problem. Were they to build a better building on their present site, or were they to go to some other site? Were they to cross the river and shelter themselves under the wing of the new County Council buildings? Were they to go up to Bloomsbury or to the Foundling Hospital? The problem demanded much thought and care, and a good deal of money.

Questions and Solutions in Carpentry and Joinery.

The June issue of the "Journal of the Incorporated British Institute of Certified Carpenters" is almost entirely—and most usefully—occupied with solutions to the questions in carpentry and joinery set at the examinations held during the present year by the City and Guilds of London Institute. The solutions are the work of

different members of the journal committee, and every solution has been examined, criticised, and, where necessary, revised and amplified, so that the entire committee share the credit and the responsibility. The solutions are, as a matter of course, to a considerable extent expressed graphically, so that this examination number is copiously illustrated. So also is the paper on the iron square which was read by Mr. W. L. Franklin at Carpenters' Hall. The solutions, however, strike us as being, on the whole, rather meagre and inadequate. The number may be obtained, post free, 4d. from 75, Harvist Road, Kilburn, W.

Wouldham Cement.

The directors of the Wouldham Cement Co., Ltd., report for the year to December 31st, 1911, that the accounts show a gross trading profit of £39,114. The available profit for the year amounts to £20,799, to which should be added the balance from 1910 of £2,012, making a total of £22,811 which the directors have dealt with as follows: Transfer to rotary kiln patent royalty account, £3,153; transfer to depreciation, £3,492; applied to dividend of 6 per cent. on the cumulative preference shares for 1911, £5,969; to dividend of 6 per cent. on the cumulative second preference shares for 1911, £4,269; leaving a balance to be carried forward of £5,928. Before arriving at the available profits, the stocks of cement have been written down to a reduced cost price. The output of Portland cement for the year has again shown an increase, which has been sold at an advanced average price. The extension of the company's works has been delayed, owing to various causes, but the burning plant has been completed, and it is anticipated that the remaining work will be finished by the end of July, or very soon thereafter.

"THE N.F. RECORD."

Under this title has been issued the first number of a new publication which is described as "The Official Quarterly of the National Federation of Building Trades of Great Britain and Ireland." It is perfectly obvious that any organisation is necessarily and seriously incomplete unless it has members—who are often widely scattered—have the means of direct inter-communication which only a periodical paper can efficiently supply. The Federation have long recognised this need, and after several tentative efforts to supply it, have at length decided on the issue of the "N.F. Record," the first number of which is now before us. Very wisely, as we venture to think, it has been resolved to send a copy of this "Record" to every member of the Federation, thus ensuring that all shall be kept regularly and closely in touch with the work of the Federation. The paper is published quarterly, immediately after the general meetings of the National Federation, and to non-members the subscription rate is 2s. 6d. per annum, post free, from Caxton House, Westminster. Judging from the first issue, we have no hesitation in saying that the "N.F. Record" is very ably conducted, and gives every promise of the efficient fulfilment of its important mission of linking up the units and the interests of the important organisation of which it is the accredited messenger. Its promoters, however, rightly aim at making it more than a mere circular of official information, and have succeeded in giving it distinct business value.

THE GRAHAM ELEVATOR.

Messrs. Scholey and Co., Ltd., have become associated with Messrs. Graham Brothers, lift makers, of Stockholm, and have recently opened at 151, Queen Victoria Street, London, E.C., an English branch to deal with the Graham lift interests in this country. A Graham elevator has been installed at that address, and it reveals a number of notable features. One of the most interesting developments in connection with electric lift service has been the introduction of the push-button system, which is well adapted to private houses, clubs, and small residential flats. Improvements have at the same time been introduced in the ordinary hand-controlled elevator, which, for large institutions and hotels where the traffic is considerable, is not likely to be superseded. It is customary to run a car-controlled lift at a speed of about 200 ft. per minute, but in the case of the push-button not more than half this speed is desirable. The lift which has been installed at 151, Queen Victoria Street, by Messrs. Scholey and Co., serves to demonstrate two systems of control—the ordinary car switch and the push-button—both methods being available in the same car. To change from the one to the other is but the work of a moment. The lift traverses four floors, the whole of the driving gear being placed in the basement. This consists of a special type of D.C. motor working on a 200-volt supply, and driving the rope drum through special worm gearing. The motor is an interesting variation from ordinary practices. Electric lifts are often said to be objectionable because of their noise; and while in some cases this may be due to badly fitting gearing, a good deal of the noise proceeds sometimes from the motor. The Graham motor is specially built to guard against this trouble, and the motor and gearing on the lift in question are quite noiseless in operation.

The drum is carried on a special quality steel shaft, the worm and wheel being cut from high-grade material and turned from the solid, thus ensuring perfect action.

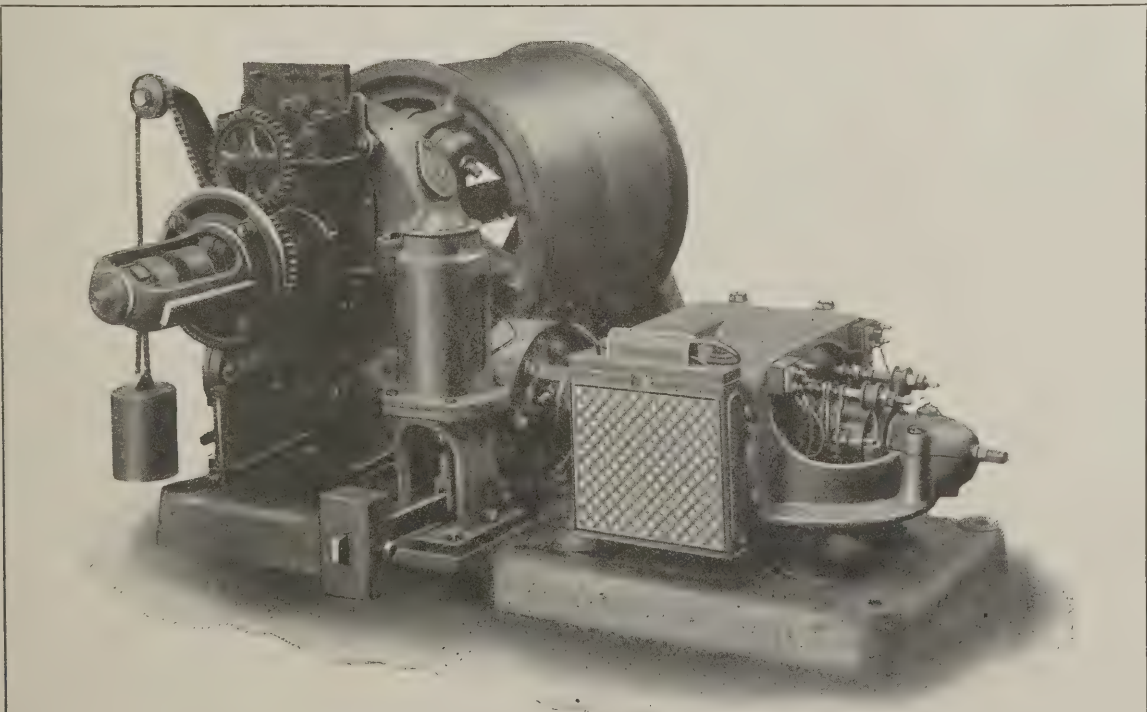
Placed alongside the driving gear is the switchboard, on which are carried the main switch, fuses, the relays for the push-button service, and four contactors which are common to both the car control and the push-button. While safety in operation has been specially considered in both systems, there are one or two notable safety devices in connection with the push-button control. One is the over-winding gear, so designed as to operate if the lift from any cause should run above or below the top or bottom floor level. This over-winding gear somewhat resembles the well-known gear used on colliery winding. On an extension of the main shaft a worm is carried, the length of which is made to correspond to the travel of the lift. During the operation of the lift a large block nut would traverse the worm, and in the event of the travel of the lift being beyond the normal limits, this nut would engage with a catch, which would have the effect of turning a contact ring (upon which carbon brush contacts are arranged) to such an extent that the brush would pass on to an insulated portion, thus interrupting the circuit. The contact rings, of which there are two, are so arranged that one ring has a slight lead over the other. The first one is connected in series with the contactor circuit, and with the interruption of this circuit the lift would immediately come to rest. If by any chance the contactor were to stick, the main circuit would be interrupted at the second ring. The action of the over-winding gear also lifts a counterweight which has the effect of resetting the apparatus, so that when over-winding has been prevented the weight would descend and turn the contact rings to their normal position.

Another safety device is an automatic slowing arrangement. This is designed to come into action when the lift is operated by the ordinary car switch control, and travelling at 200 ft. per minute. In circuit with the main switch control are a series of ring contacts fitted on to the end of the drum shaft and operated by a reduction gear. The use of this is that if the lift man should forget the floor he is

approaching the lift would be slowed up and stopped automatically at the top or the bottom.

The gear is fitted with an improved form of hand brake operated by a solenoid specially wound for elevator service. The brake is released by exciting the solenoid, which lifts an armature connected to a lever fitted with an adjustable weight to give a large margin of adjustment. A switch comes into operation immediately the brake is worked or lifted, being opened automatically by the armature of the solenoid. In connection with this switch a resistance is inserted in the solenoid circuit, thus reducing the current and preventing the solenoid from becoming overheated by the continual working of the brake.

As already stated, the lift is furnished with the ordinary car controller and a push-button system, which latter would appear to be as safe as human ingenuity could make it. A series of push-buttons are carried in the car, each indicating a given floor. The operation of any one of these buttons will carry the car automatically to the floor required. It is important to note, however, that a gate cannot be opened until the lift is completely at rest. Further, the lift will not move until the gate has been properly closed. The closing of the gate completes the circuit by which alone the lift will respond to the push-button, and if any of the gates on any floor are not properly closed the lift will not travel. The operation is as follows: As soon as the button is pushed, a relay keeps the circuit closed until the lift arrives at the floor. The circuit is maintained and broken in the following manner: A contact maker, consisting of a split drum, is driven from the main shaft through a chain and sprocket wheel. Round this contact drum are arranged a number of arms which carry copper gauze contacts, an arm corresponding to each floor. Whenever a button is pushed the relays close the circuit, and current flows through the arm and the drum with which it was in contact. The contact drum is mounted on a screw, and during the period of rotation it travels for



THE "GRAHAM" ELECTRIC GEAR EQUIPMENT FOR PASSENGER LIFTS.

a short distance in a lateral direction. The effect of this is that a small opening cut on the face of the drum passes sooner or later under each contact, and if such contact were in action the circuit would be broken directly the gap in the drum face passed under it. The length of lateral travel would depend entirely on the number of floors controlled; for instance, if the push-button for the first floor were in operation, the contact drum would only move a comparatively short distance before the contact arm corresponding to the floor came to the gap in the drum, and thus broke the contact. Clearly the act of breaking contact would coincide with the lift reaching the floor under control. A distinctly new feature is the use of a second push-button, arranged at each lift gate, by which the car is returned automatically to the ground floor. The car switch controller varies but little from the familiar type, an important improvement, however, being the provision of the renewable contacts.

KING ALFRED AND THE "ARCHITECT."

The Lord Mayor of London unveiled last week a new panel in the Ambulatory of the Royal Exchange. The painting, which is the gift of Alderman Sir Charles Wakefield, is the eighteenth of the series. The artist, Mr. Frank O. Salisbury, has depicted King Alfred inspecting the work of repairing the City walls, which he directed to be done after the expulsion of the Danes. The King is mounted on a black charger, over the saddle of which is spread a Polar bear's skin. His body-guard accompanies him, and he is shown conversing with the architect [? master mason], who, standing on a scaffolding above, is pointing to an old Roman plan of the wall. In the background appears the remains of the old Roman wall, with the regular courses of tiles running through the stonework. Sir Alfred East, A.R.A., speaking at a luncheon held afterwards, said that this was a very noble decorative painting, which was not only excellent as a pictorial delineation of an historical incident, but was executed in a truly decorative manner.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

Cross Lighting and Ventilation.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I have read with interest the notes which you have added to the letters by Mr. George H. Widdows on this subject, and as one who has had a very considerable experience of the ventilation of schools and other buildings, I may be in a position to give you the information which you desire regarding the school in Scotland.

The late Professor Carnelley, who investigated the subject of ventilation of schools, proved conclusively that the schools ventilated mechanically on the Plenum system had a superior condition of air as compared with schools naturally ventilated. The volume of carbonic acid was only three-fifths, organic matter one-seventh, and micro-organisms less than one-ninth in the mechanically ventilated schools of what there were in the naturally ventilated schools.

Mr. John Foggie, F.C.S., who assisted

Professor Carnelley, made an examination of the air of a village school. At the time of his visit the windows on both sides of the class-room were open so as to allow a free movement of air through the room. This, I presume, is the arrangement which is advocated by Mr. Widdows, and if his contention is correct, in this particular instance the air that the children were inhaling would be of the greatest purity, as the school was far removed from any city or even town. What was the result of the test? The number of micro-organisms obtained from each litre of air was quite as large as in schools of a similar construction situated in the cities, being seventy micro-organisms per litre, or about 2,000 in each cubic foot of air, thus proving that the free movement of air was only above the level of the window sills, and that this movement in no way reduced the number at the level of the heads of the scholars.

Mr. Widdows does not state what the outside and inside temperatures were when he carried out his ten times per hour test, without draughts, and would the room still be without draughts if the outside temperature was 30 degrees F. and the inside 60 degrees F.?

X.

THE LAW OF COPYRIGHT.

In addition to the two books on this subject, written respectively by Mr. E. J. MacGillivray (Stevens and Sons), and Mr. Henry Hurrell and M. Maurice Théry (Waterlow and Sons), which were reviewed last week, we have received "The Law of Copyright,"* by Mr. George Stuart Robertson, M.A., of the Inner Temple and the Oxford Circuit, barrister-at-law.

Mr. Robertson, in his lucid summary and discussion of the provisions of the Act, states that the making and publishing of paintings, drawings, engravings, or photographs of a work of sculpture or artistic craftsmanship, if permanently situated in a public place or building, or the making or publishing of paintings, drawings, engravings, or photographs (which are not in the nature of architectural drawings or plans) of any architectural work of art, is not an infringement of copyright. "The owner of a copyright," he comments, "is entitled to an injunction to restrain any species of infringement, and the fact that the infringement is minute is no reason why an injunction should be refused. This, however, is limited in cases where the construction of a building or other structure which infringes, or which if completed would infringe, the copyright in some other work has been commenced. In such a case," Mr. Robertson points out, "the owner of the copyright is not entitled to obtain an injunction or interdict to restrain the construction of such building or structure or to order its demolition, but is left to his other remedies." The effect of the new law on architecture is the subject of several luminous references in Mr. Robertson's admirable book, which, however, following the Act, deals chiefly with matters in which the architect is not directly concerned. The book is remarkable for its wealth of apt illustrations drawn from cases in point. The preface and the first chapter state with great clearness and conciseness the scope of the new Act, and three appendices condense much valuable information as to various earlier Copyright Acts, British and foreign, and summarise the results of the several conventions.

*"The Law of Copyright." By George Stuart Robertson, M.A., of the Inner Temple and the Oxford Circuit, Barrister-at-Law, etc. Oxford: At the Clarendon Press. Pages xxxii. + 352, 9 ins.; by 5¾ ins., price ios. 6d. net.

COMPETITIONS.

Glasgow Municipal Buildings.

The Glasgow Corporation Committee or Municipal Buildings have now approved of the general conditions for the competitive designs to be invited from outside architects for the proposed extension of the buildings. The extension will be erected upon ground on the east side of John Street. Mr. John Burnet, LL.D., A.R.S.A., has been appointed assessor of the competition, which closes on October 29th. From the preliminary sketches not more than five designs will be selected, and the authors, who will be invited to submit final designs for competition, will each receive an honorarium of 100 guineas. The corporation have, it seems, waived the right to invite not more than three other well-known architects who may not have submitted designs in the first competition to join in the final competition. The extension may be designed as a detached building to afford all the accommodation for the various departments, but if so designed adequate connection with the existing building must be shown at least on the level of the second floor. The style of the building is left to the competitors, but its harmony with the City Chambers and, if possible, with the existing Sanitary Chambers in Cochrane Street, should be carefully considered. It is further required that the extension should be executed in freestone in keeping with that of the existing building. The corporation are advised that a building suitable for their requirements should be obtained for £150,000, including the expense of alteration of the existing building.

Nethertown Institute, Dunfermline.

The assessor, Mr. E. Auldjo Jamieson has made the following awards: 1 (£20) Messrs. Williamson and Reid (Inverkeithing); 2 (£15), Mr. J. D. Cairns (Edinburgh); 3 (£10), Messrs. Walgate and Clough (London).

LIST OF COMPETITIONS OPEN.

AUGUST 6. FIRE BRIGADE STATION CARDIFF.—Cardiff Corporation invite architects to submit designs and estimates in competition for a fire brigade station proposed to be erected in Westgate Street, Cardiff. The Corporation have appointed Mr. A. Marshall MacKenzie, A.R.S.A., F.R.I.B.A., to act as assessor. Particulars on deposit of two guineas (returnable) from J. L. Wheatley, Town Clerk, City Hall, Cardiff.

AUGUST 30. SAXON SNELL PRIZE.—Fifty guineas, with medal, for essay on hospital construction. Apply, Sanitary Institute, 90, Buckingham Palace Road.

SEPTEMBER 1. MUNICIPAL OFFICES GOOLE.—Premiums, £30 and £15. Particulars, Mr. R. Tyson, Council Offices Goole.

SEPTEMBER 30. NEW BUILDINGS, UNIVERSITY COLLEGE, DUBLIN.—The Governing Body of the University College, Dublin, invite architects to submit designs for new college buildings. Competition is limited to architects living and practising in Ireland. Mr. H. T. Hare, F.R.I.B.A., has been appointed the assessor. Applications, accompanied by a cheque for two guineas (returnable), to J. W. Bacon, M.A., Secretary and Bursar, 86, St. Stephen's Green, Dublin.

OCTOBER 1. KING EDWARD MONUMENT, OTTAWA.—Sketch models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
JULY 17th, 1912.

Volume XXXVI.

No. 913.



BANKERS' TRUST BUILDING, NEW YORK: ENTRANCE
CORRIDOR. TROWBRIDGE AND LIVINGSTON, ARCHITECTS.

(See page 59.)



Gothic work being rare in Italy, this very remarkable specimen, which dates from the fifteenth century, is specially noteworthy. It is carved in either oak or chestnut, which is now of a dark brown colour.

MEASURED AND DRAWN BY C. WONTNER SMITH, F.R.I.B.A.

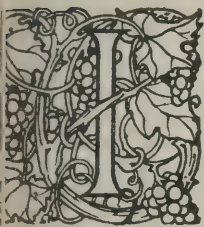
THE ARCHITECTS' & BUILDERS' JOURNAL.

JULY 17th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 913.

The London Museum.



It was a happy idea to utilise old Kensington Palace as an immediately available home for the London Museum. It is true that we cannot regard it as a permanent home of the Museum, as it is not large enough even for the present contents, and apologies are hung up for the crowding and the ineffective arrangement of many of the prints and drawings on the ground of want of space; and the ideal London Museum is to reach its fulfilment there must be far more to come in the future than there is now. A building must certainly be eventually erected and planned for the purpose. In the meantime, the fact that Kensington Palace was available rendered it possible to make a start with the Museum at once, instead of waiting years for a new building.

The Palace has had a curious history. Originally a house was built here by Sir Heneage Finch, afterwards Earl of Nottingham and Lord Chancellor, and was thence called Nottingham House, when it was purchased by William III. in 1689 to form the nucleus of a palace which would be conveniently near London and yet quiet and retired. The large block of the south front is Wren's work, in his usual plain style when he was dealing with a habitation, for he evidently approved of Bacon's axiom, "Houses are built to live in, not to look at." Mr. Ernest Law, who writes the excellent guide-book to the Museum, believes the low building to the left of the central block to be part of the old Nottingham House, and we should say there is every probability of this. It seems rather strange that the matter should be in doubt at all; there must be some representation of old Nottingham House somewhere in existence which would identify it.

The new building was commenced in October, 1689, and seeing that it was carried out under the guidance of Sir Christopher Wren, Knight, Surveyor of the Works, and "Nicholas Hawkesmore," "clerke of the said workes, according to the ancient usual and due course of the office of their Majesties' workes," it is rather surprising to find that when the work had been in progress only a few weeks, a wall of it fell down, killing seven or eight men. This was not Wren's fault, we may be quite sure; it would be interesting to know what he had to say about it. The date of the accident seems to indicate that they had been in a good deal of hurry, either with the foundations or the walling. Another misfortune occurred in 1691, before the buildings were finished, in the shape of a serious fire, which necessitated a considerable expenditure in rebuilding. Under Queen Anne the palace was well taken care of, and an engraving of it as it was in her reign shows a very extensive formal garden in front of it. Mr. Law calls this "Queen Anne's garden," but it was probably initiated by William III. With his Dutch tastes it would be naturally one of the first things he would think of, and the style of the gardens is exactly similar to those

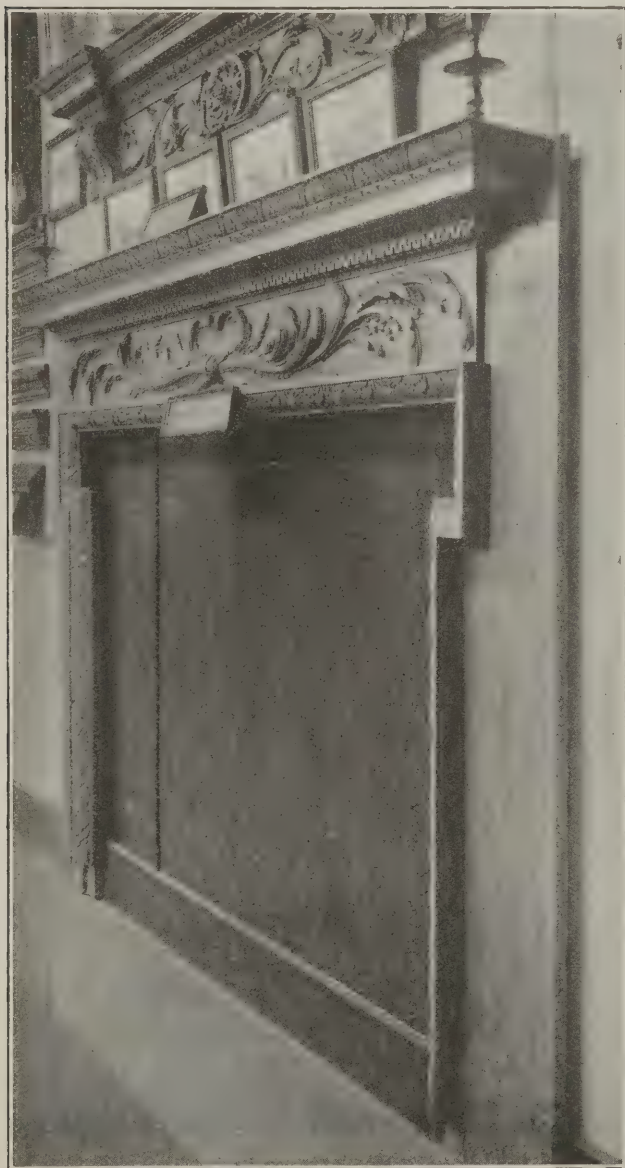
originally laid out for him in front of Hampton Court Palace. In more recent days the building, having dropped out of use, had been allowed to fall into decay so much that at one time it was seriously contemplated to pull it down; and though one cannot honestly think that architecture would have been very much poorer by its loss, it would have been a sinful thing to do away with a building connected with so much that is historically interesting; and now that the London Museum scheme has been instituted the repaired building has turned out to be of real use.

Wren's simple wooden staircase which was built specially for the Queen's access to her apartments, and which is now the public staircase to the museum, is one of the best things in the building; the width of the stair, in comparison with the size of the hall and its easy gradient, giving a sense of dignity to it in spite of its small scale. The range of apartments to which it leads is planned with that curious absence of planning, all the rooms opening into each other without any general corridor, which seems to have satisfied the simpler conditions of English life in great houses down to the end of the seventeenth century or thereabouts. At Hampton Court, as will be remembered, all the long ranges of rooms are treated in the same way, each room being a passage to another. It is difficult to understand how the decencies of life could have been observed, even sufficiently for those less exacting days, with such an arrangement of interiors, but it answers admirably for the conditions of a museum—no space is wasted in corridors. In the first long room, "Queen Mary's Gallery," are the most ancient objects in the museum, those which take us back to the time (how long ago?) when palæolithic man chipped flints into crudely formed weapon-heads, and neolithic man succeeded in making a more finished stone battle-axe head, and dropped it into the Thames in the region now called Wandsworth. So many of these prehistoric weapons are found at Wandsworth that one may surmise that this was the most populated point of the banks of the lower Thames ages before the site of London was adopted. Then we have the remains of Roman occupation, indicative of the high state of civilisation in Roman London from the first to the fifth century, reminding us that for nearly five centuries England was a Roman province. Centuries narrow up so in the perspective of time that one has to compare with a more modern period to realise it. Think of all that has happened and developed in English history from the Wars of the Roses till this present year, and reflect that for a period equal to that all rule and civilisation in England was Roman. It is worth while to try to realise this; we seldom do. When we do it does not seem surprising that we still stumble on traces of Rome at almost every turn. Among the relics in this room is a small marble tombstone, or rather a grave relief, found in a house in Drury Lane, but defined by Roman archaeologists as probably work from Smyrna of the first century B.C. or A.D. How did that come to be found on the site which is now Drury Lane? One might almost construct a romance out of that.

Pottery, Roman and mediæval, is collected in this gallery, and to the mediæval and Early Renaissance

periods belong the majority of swords and daggers exhibited, many of them the left-handed daggers used in the days when, for some perhaps fancied slight, men fought till they killed each other with a sword in one hand and a dagger in the other. It is rather curious to note what a large proportion of the contents of this as of other archaeological museums consists in weapons of offence—various contrivances made by men to kill each other. At the end of the gallery there is a collection of a different kind of interest, that of numerous water-colours by Mr. Philip Norman of sites and buildings in London now destroyed. These, however, are neither so numerous nor quite so good as the splendid series by Shepherd in the Crace Collection. There are also a number of old engravings of London buildings. Some of these, we imagine, are Hollar's, but are not so described, and, in fact, there ought to be a little more information for the public about these and a good many other old drawings and engravings in this and another room. There appears to be no detailed catalogue, and it requires some previous knowledge of the history of London topography to identify many of the places illustrated.

In the second room is a good exhibition of Lambeth delft pottery, mainly blue and white, and in the third room a collection of Chelsea and Battersea coloured porcelain. London-made clocks and watches find place



Copyright: William E. Gray.

CARVED WOODEN MANTELPIECE FROM KEELEY STREET
(IN THE LONDON MUSEUM).

among other things, in the fourth room, and among the contents of the fifth room is a sumptuous silver-gilt wine cooler of the time of George II., presented by Mr. A. de Rothschild. The cupola room, as it is called, is a room with the ceiling in four large coves, leaving so small a space between them at the top that the ceiling has almost the effect of a square dome. The room is a heavy piece of architecture by Kent, not attractive in itself, but three of the cases contain some beautiful silver work from the time of Charles II. to George IV., especially a sou-tureen, dated 1799, in the first case—a perfect piece of silver design. Among the objects in this room is a good example of the silver model of a ship—the *nef*, as it was called—which was once a common and almost indispensable centre ornament to a richly furnished dinner-table, though what was the particular point of having a ship in the centre of the dinner-table it is not easy to see. Nothing is said in the catalogue about this exhibit, the meaning of which ought to be explained, as the majority of visitors probably know nothing about it. The author of the catalogue in connection with this cupola room draws attention to Kent's practical sense in planning the double doors, so that when the room was wanted for evening entertainments the doors folded back into a recess in the wall and left the entrance entirely unimpeded. He says, "This is a point never thought of by modern architects, who might do worse when designing great reception rooms than take a hint in this manner from the too much condemned Kent." We do not know that such a thing is "never" thought of, but it is true that we often see practical oversights of this kind in the planning of rooms for large assemblies.

Of the large number of portraits contained in the London Museum we need say nothing except this, that they are included not for their artistic value (which in many cases is very small), but simply as likenesses of persons connected with London history. This is the right view to take. A museum is not to be a collection of artistic work (unless it is specifically an "art museum") but a collection of objects of historical interest, including portraits. So long, therefore, as a portrait is a presumable likeness of a person of historical interest it has a right to inclusion, even if in other respects it is a bad painting.

The Annexe, as the small subsidiary building in the grounds of the palace is called, may be considered to be an overflow exhibition. It contains a good deal of work which is of value in an artistic as well as an historic sense—old carved woodwork from dismantled buildings more especially. Among the best of these are a wooden mantelpiece from 3, Church Row, Fulham; another from a house in Keeley Street (a street called probably after a once celebrated actor of that name); and another from 2, Millbank Street. This last, the best of the three, is a beautiful piece in the purest taste, and would find a place in any art museum on its artistic merits alone. The heavily cross-barred door of old Newgate Prison has a sinister but picturesque interest, and there are examples of some of the long, heavy iron shackles with which the legs of unfortunate prisoners were once loaded, the use of which is illustrated in the figure of Captain Macheath in Hogarth's well-known picture of a scene from "The Beggars' Opera." In a well in the centre of the building the fragmentary remains of the ancient Roman galley found in making the foundations for the London County Hall have been disposed, so that the spectator looks down on them from above. This was the best way of treating this interesting relic, which is in far too fragile a state to have been built up or held together in any other position.

It is impossible while speaking of the old palace which Wren had so much hand to avoid another glance at his fine piece of work in the building known as the Orangery, and probably built for some such purpose as that indicated in the title. The effect produced by the building is largely due to its splendid execution in brickwork. It is a design which would not impress one very much in a drawing—it is only a scholarly combination of accepted forms of classic architecture—but the manner



Copyright: William E. Gray.

CARVED WOODEN MANTELPIECE FROM MILLBANK STREET
(IN THE LONDON MUSEUM).

which the brickwork has been treated compels the highest admiration. Wren must have set a high value on good brickwork, for wherever one finds brickwork in any building of his it is sure to be first-rate. The design of the end alcoves in the interior is charming. It seems a pity that this beautiful building should stand empty, and should never be made use for any public or ceremonial purpose; but it must be admitted that the stone floor is an obstacle to its use, and we certainly would not wish to have a wooden floor put down in it. It is rather amusing to find that the one object inside it at present is a specimen of the London hansom cab, presented by a firm of makers or owners as a contribution to the Museum. If the donors no doubt think, the hansom cab is likely to become extinct before long, it is certainly an object of which the London Museum should possess an example. The placing of it here seems to imply that the Orangery is so considered as an annexe to the Museum, or may become one in time. That might be a good use for it, especially if it can be devoted to any special class of objects.

The new "sunk garden," which has been formed opposite to but not connected with the Orangery, on a site formerly occupied by some potting sheds, deserves a word. It consists of a long rectangular pond, on the centre line of which some old decorative leaden cisterns have been rather incongruously placed, as one way of showing them. Small terraced grass banks, in three stages, have been formed round it, and of course there

are beds of flowers. The public are not admitted into it, but can look at it through arched openings in the clipped hedge. The intention of the work was good, but it seems to have been carried out rather cheaply. Such a thing ought to be done very well if it is done at all, and the boxes with leafage in them round the sides of the pond disturb the lines and look too much as if the whole thing wanted combing down, so to speak. A formal garden cannot be too formal; its beauty consists in its consistent formality.

As already observed, there can be no question that if the London Museum is to be carried out to its full possibilities as an illustration of London history a building must eventually be erected especially for it, unless any existing building much larger than Kensington Palace should become available. The palace is already too small, and much more material could be and probably will be collected. There is one collection alone which would need a long gallery to itself, and which ought to form part, and a most important part, of the London Museum. That is the Crace Collection of plans and views of Old London, the plans being continuous from about the middle of the sixteenth century to the middle of the nineteenth. This splendid and unique collection was exhibited as a whole for two or three years in the old long galleries in Exhibition Road, where the series could be studied as a whole. When these galleries were pulled down the collection (we know not on what terms) was acquired by the British Museum, and is now stored away in the recesses of the Print Room, where it cannot be seen as a whole, and where none but students even know of its existence. It is deplorable that such a collection should be wasted so far as the general public are concerned. Whenever a London Museum building can be erected the Crace Collection ought to be disinterred from the British Museum and placed in a gallery planned for it. It would be of some educational use to the public then; it is absolutely lost to them at present.

Professor Flinders Petrie's Exhibition.

AT University College there is on view the usual annual exhibition of objects of Egyptian antiquity discovered by Professor Flinders Petrie and his colleagues during their season's exploration in Egypt. The finds this year have been at Tarkhan, Heliopolis, and Memphis.

Among the novelties this year are some bed-frames found in graves, buried with the occupant so that he might have something to repose on. It is stated that this was a custom "before the age of Mena," the first Egyptian King whose name is recorded (it is doubted by some whether he was not a mythical personage); this means that they date from at least 5,000 B.C. It is rather difficult to believe that wood in this degree of preservation can really be as old as that. The bed-frames consist of rounded poles supported at each end, in the best examples, on carved animal's feet; in the principal example shown these are cloven hoofs. The two longitudinal pieces were connected by cross-pieces at the ends, the centre space being filled by a cross-webbing of palm fibre or rush, plaited.

Among the exhibits are a number of those apparently very uncomfortable curved head-rests which supplied the place of pillows; one can hardly wonder that Pharaoh had uncomfortable dreams if he rested his head on one of

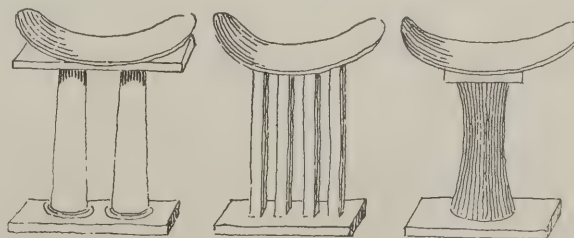


FIG. 1.

THREE FORMS OF ANCIENT EGYPTIAN HEAD-REST.

these. Three of these we have sketched (Fig. 1), as they are of rather peculiar and unusual design. That on the left is said by the explorers to be the oldest in date of the collection; the oldest of these three it may be—probably is; but as it shows much more of a design than the majority of them, which have mostly perfectly plain block uprights, one would be naturally disposed to think that the more elaborate examples were the later. The one on the right has a stem of dark hard wood fluted like a column. The head-rests generally belong to the third and fourth dynasties; that is, from about 4500 to 3950 B.C.

There are a good many examples of planks pierced for ligatures of some kind, which are supposed to have been used as part of the upright partitions of plank houses; and a curious point is that the bottom boards of one of the coffins exhibited are made of planks which had previously been used in this way, and show pierced openings which have nothing to do with the construction of the coffin. We may imagine from this that in ancient Egypt there were occasionally sales of old building material from dismantled houses. A very curious detail occurs in the panelled coffin, of which we give a sketch (Fig. 2). The blocks in the spaces between the

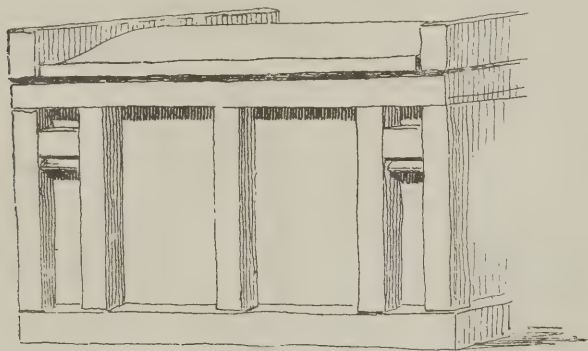


FIG. 2.

PANELLED COFFIN IMITATED FROM A TIMBER HOUSE.

end uprights, each with a rounded member under it, represent a form which is familiar in very early rock-cut façades in Egypt, which obviously imitate a timber construction, the rounded piece representing an unworked log put over the entrance as a lintel, and afterwards imitated in stone. Here it is back in the wood again; a wooden imitation of a stone imitation of wood. It is a curious piece of evidence of the intense conservatism of Egypt.

The Whitgift Hospital Still in Danger.

IT seems that those who had thought that the scheme for Croydon "street improvements," involving the destruction of the fine Elizabethan almshouses known as the Whitgift Hospital had been finally abandoned had imagined a vain thing. The vandals were never easy to vanquish. Indeed, it would seem that the matter was by no means finally disposed of as the result of the vigorous and widespread public protest that arose rather more than a year ago, when Mr. John Burns, as President of the Local Government Board, postponed his decision on the issue pending the production of the Croydon Borough Council's complete scheme for the widening operations which threatened the demolition or at least the mutilation of the almshouses. The Streets Improvement Committee have now presented to the Council four schemes, recommending one by which the present line of widening would be continued, and at least half of the hospital would be demolished. The awkward predicament in which the committee now finds itself ought to have been foreseen. The consequences of continuing the widening on the line upon which progress has been already made must have been patent at the outset. Perhaps what was not anticipated was the strength of the public protest that was made as soon as the intention

of destroying the almshouses was realised. Merely local opposition might not have mattered very much; but the Whitgift Hospital is known far and wide as a relic of Elizabethan architecture that is worth preserving for its intrinsic merits as well as because of its age, and the renewal of the attempt on it, after more than a twelve-months' quiescence, is certain to meet with intensified, and we trust effectual, opposition.

The Edinburgh Memorial to King Edward.

IT would seem that in selecting for the Scottish national memorial to King Edward the design of Mr. G. Washington Brown, R.S.A., the committee have secured what, so far as can be judged from the newspaper illustrations of it that have been published, promises to be an artistic and a dignified monument, possessing more strength of character than can be usually attributed to works of this kind. The treatment is largely architectural, the statuary being subordinated to its setting. "The design takes the form of two hemicycles of 120 ft. diameter, one at the northern, the other at the southern end of the Palace [of Holyrood], their central lines being axial with the fountain which occupies the centre of the forecourt. The colonnade in each hemicycle consists of thirteen bays measuring 14 ft. from centre to centre, and 22 ft. high. In the southern one the area within the semicircle is raised 3 ft. above the level of the forecourt and in the centre of this paved platform is set, within an arch flanked by columns and crowned by a Doric entablature, a bronze group representing King Edward VII. crowned and attired in the robes of the Order of the Thistle, receiving from female figures emblematic of Peace and Concord the wreath and laurel." The architectural treatment follows that of the main doorway of the Palace, whose courtyard it will enclose as with a screen forming a triple gateway. Mr. Albert H. Hodges, the sculptor, is a Scotsman living in London.

Winchester Cathedral.

MR. T. G. Jackson's communication to "The Times" of Saturday on the work done to secure Winchester Cathedral forms an interesting statement of the difficulties encountered and the means taken to meet them. The state of the cathedral adds to the many instances of the carelessness of mediæval builders in regard to providing adequate foundations, or shall we say the simple faith which they seem to have had that what seemed secure for the moment would be secure for the future? The ground on which the walls were built is a soft, loamy soil resting, at a depth of 20 ft. to 24 ft. on a bed of hard gravel, but heavily charged with water. It was the difficulty of dealing with the water which apparently frightened the builders from attempting to go down to the gravel foundation, and induced them to rely on timber footings laid crossways into the soft earth, into which they have been forced down, causing subsidence of the main walls, which resulted in completely dislocating and tearing to pieces the vaulting. Mr. Jackson and his engineering colleague, Mr. Francis Fox, who was called in to assist with his experience in wet foundation thought the internal piers must, in the course of 800 years have compressed the peat to the utmost, so that if later extension were prevented they would not sink further. Accordingly, the underpinning down to the gravel bed was confined to the exterior walls, and now that this has been accomplished, with great difficulty and by the aid of divers working under water, it is hoped that the cathedral has been made safe from further failure. Probably this hope will be realised; the course taken seems to have been quite the best that could be followed under the circumstances, short of facing the immense cost and difficulty of underpinning every part of the structure down to the gravel, and the architect and engineer who have directed the work may be congratulated on the apparently successful termination of one of the most difficult problems in the repair of an ancient building which has ever had to be faced.

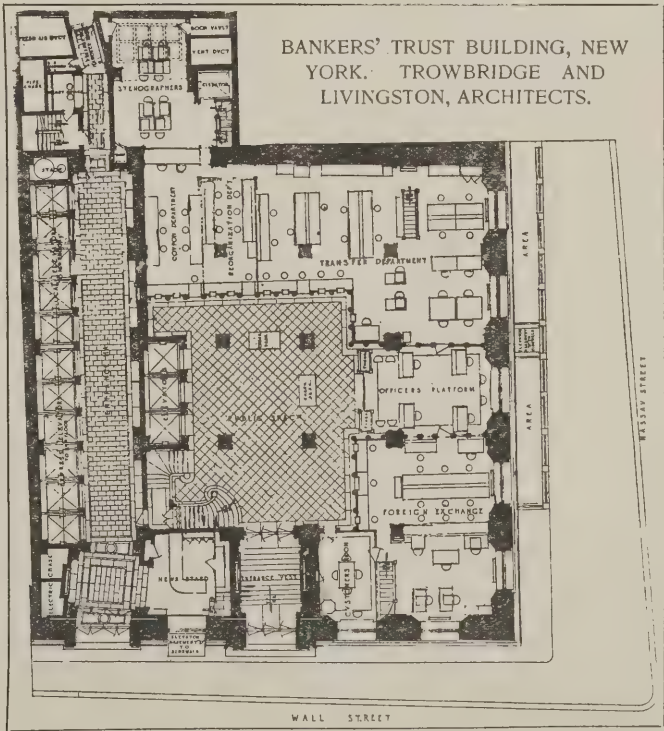
THE BANKERS' TRUST BUILDING, NEW YORK.

SOME months ago we published Mr. Cass Gilbert's drawings for the huge Woolworth Building, which is being erected in New York at the present time. We now give some views of a similar though not so high a building—the Bankers' Trust Building at the corner of Wall Street and Nassau Street, of which the architects are Messrs. Trowbridge and Livingston.

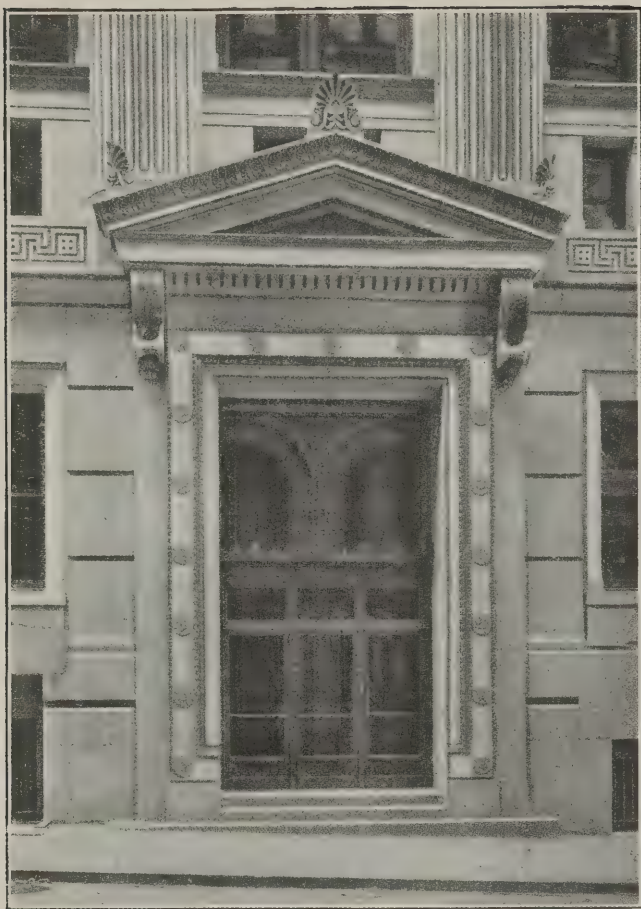
Many critics in discussing the evolution of the tall office building have insisted that not sufficient emphasis is laid on the vertical members in the majority of structures, and they would rather condemn the use of the Order as indicative of post and lintel construction, while upholding as models such structures as the one designed by Mr. Louis Sullivan in Bleecker Street, New York, in which the horizontal members have been almost entirely concealed and the vertical members are dominant. The critics of this school have generally held that the Gothic style with its possibilities of accentuating the columns was the ultimate expression of steel construction; but one may well differ from this opinion. It is perhaps true that the structure of a building should be indicated by its exterior, but the question as to how far this indication should be carried gives opportunity for a wide divergence of views. Every steel building is primarily of post and lintel construction, and just why the Gothic style—which is fundamentally arch construction, absolutely at variance with the principles of the actual work it encloses—should be more appropriate than a frank use of mason work as fireproofing, with post-lintel Classic architecture as decoration, is not readily comprehensible. As a Classic treatment, in distinction from the Gothic treatment referred to above, the Bankers' Trust Building offers a fine example. Built upon an almost square site, its outline is that of a tower of which the base is a magnificent Ionic Order, the shaft a stone curtain wall, the attic a second Ionic Order, and the crown a stepped pyramid. If architecture is worth anything at all it must convey, through whatever means it



LOWER STOREYS.



employs, the impression of beauty, and in this Messrs. Trowbridge and Livingston have been immensely successful in a problem bristling with difficulties. The ground and first floors were each designed originally to contain a separate banking institution, but after the structure was very nearly complete these were merged



BANKERS' TRUST BUILDING, NEW YORK: ENTRANCE.

into a single corporation. Above the banking room had to be placed a sufficient number of office floors to make a very expensive site and a very elaborate structure economically successful. This necessitated the lower part of the building being so treated as to indicate not one but two banking offices; and as the lower part of the building can only be seen from comparatively near at hand, it had to be designed on a scale which, satisfactory on close inspection, is still large enough to form an adequate base for the tallest completed building in the world. This result was secured by the use of a Grecian Order with fluted columns of great refinement but large size; with belt courses delicately modelled, and mouldings undercut sufficiently to make their shadows strong enough to count with the whole mass.

The engaged columns at the twenty-sixth storey have been modelled from the well-known Bassæ cap, which is about the most refractory example that the Greeks have left us. The pyramidal top is an expedient which is both novel and successful. The space is not wasted, but encloses record rooms, certain offices, and storage spaces which had to be worked into the building somewhere and can be obtained here at as little expense as possible.

The three lowest storeys are occupied by the Bankers' Trust Company. On the ground floor are the foreign exchange, transfer and coupon departments, whose activities are distinct from those of the bond, trust, and banking departments on the main or first floor. The two storeys are connected by three large private lifts and a marble staircase of interesting design. The interior of the lower floor is treated in a light brown marble. Down either side of the main banking room runs a row of four Ionic columns, with Bassæ caps again used to good advantage.

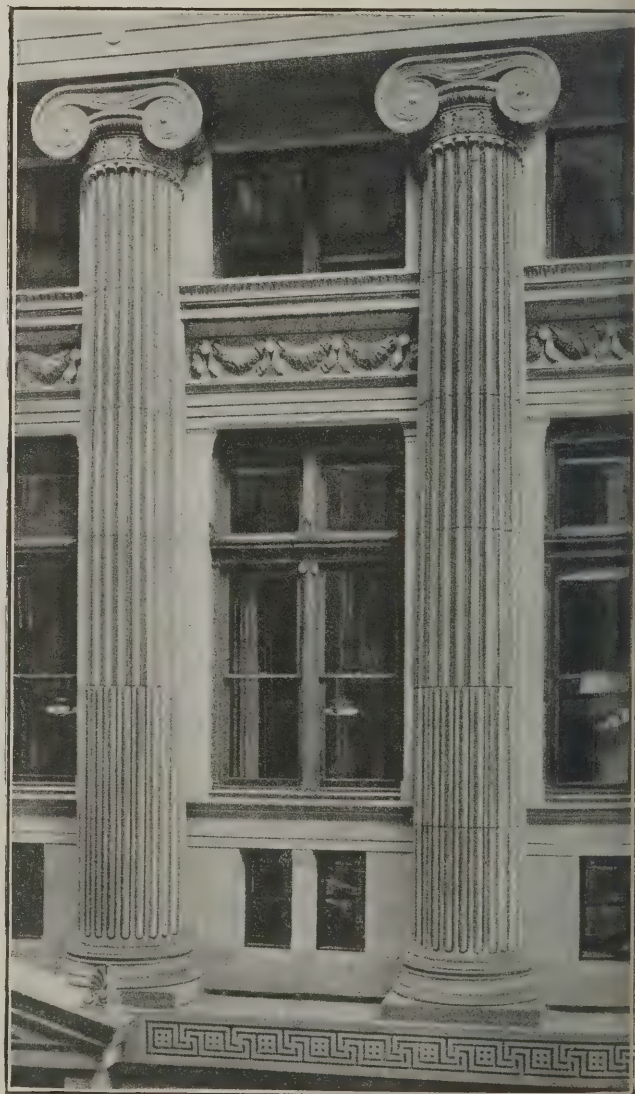
The upper portion of the lift enclosure is entirely of plate glass—a frank revelation of modern mechanism in a Greek temple interior, which is somewhat startling, though at the same time fascinating. The interiors of both the banking rooms are notable for simple, clean

design, quiet colour, and an air of business-like beauty; they are designed, indeed, to express as far as possible what should be (and probably is) the spirit of the institution. There is no feeling of oppressive magnificence, although one recognises at once that expense has not been spared; and this impression is assisted by the ceiling treatment, which is of plaster finished like Caen stone, with the coffers kept very flat, the mouldings decorated with Greek motives and delicately tinted in pale colours.

The corridor or entrance hall leading past the lifts to the upper floors is another good piece of design, with coffered barrel vault, and a rather simple type of metalwork in the lift fronts.

The keynote of the entire building is a refined elegance.

Luxury and magnificence have been left out of the scheme altogether. Gilding, marbles, ornate metalwork, and brilliant colours of all kinds are absent, the building being almost Puritanical in its simplicity; but what has not been forgotten in any portion of the building is quiet, ordered, and delicate design. The work has been done throughout with a sure hand, and even such details as the office fittings, the electric switch-boards, the check desks, and small matters of that kind, have been handled with firmness and accuracy. In brief, the building throughout has an air of reticence and power which augurs well for the future of American architecture, and—we trust that it is not ungracious to say it—that comes as a welcome relief from the overwhelming sumptuousness (to give it no uglier name) that too often characterises American buildings of this class.

BANKERS' TRUST BUILDING, NEW YORK:
DETAIL OF FAÇADE.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

Architects' Assistants and the Insurance Act.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Will you permit me—in the interests of the uninitiated—to make the following comments on three points contained in the very lucid article on the above subject in your issue of July 3rd, page 7:—

(1) *Paragraph 3.*—"The assistant must obtain Form 1 from the local post office," etc. This is rather misleading, inasmuch as it states—almost as if it were compulsory—the method to be adopted by a person who is obliged to insure for the state benefit, and who is not already a member of any society. The proper method to adopt is that advised in paragraph 8, viz., to join an approved society. This is the method intended and advised by those who framed the Act, for all who do so (see official leaflets Nos. 5 and 6), as the "Deposit Insurance" through the post office is a temporary expedient only intended for those unable or unwilling to join a society.

The necessary proposal forms can be obtained from the agents of any of the approved societies; it is not necessary to get any forms from the post office.

(2) *End of Paragraph 3.*—"The employer should retain it [*i.e.*, the card] until the assistant leaves, and takes it to another employer." It is clearly stated in part 5 of the official pamphlet A, that the employer *must* keep the card, unless the employer and worker agree together that the employer shall do so. The employer apparently has no right to retain the card except for the purpose of affixing the stamps.

Each card will last for thirteen weeks only, and must then contain thirteen stamps, and be exchanged at the employee's society's agency or a post office for new card.

(3) *Paragraph 9.*—"Strict medical examination imposed by all the approved societies." Medical examination is not required at all—by approved societies in

general—of persons seeking to insure for the benefits under the Act, except in special cases. The paragraph rather implies that it is demanded in all cases. A society can demand a medical certificate of good health, and no doubt will do so when an applicant's proposal does not contain satisfactory evidence of normal health.

I do not wish these remarks to appear in any way as critical on the article referred to.

FREDERIC A. BROAD.

Bournemouth.



BANKERS' TRUST BUILDING NEW YORK: STAIRCASE.

What is Wrong with the Building Trade?

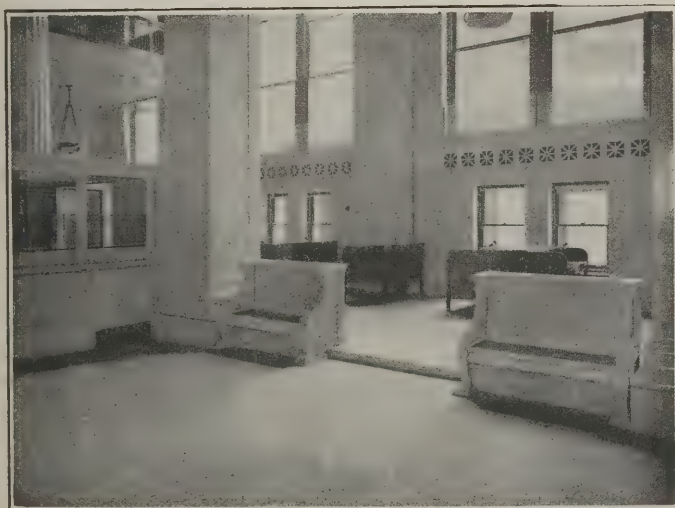
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Your recent articles on this subject touch the point pretty closely, but the architect in private practice who advertised for tenders for a private residence is quite unjustified in arriving at the conclusion suggested in your article. Why did he advertise? . . .

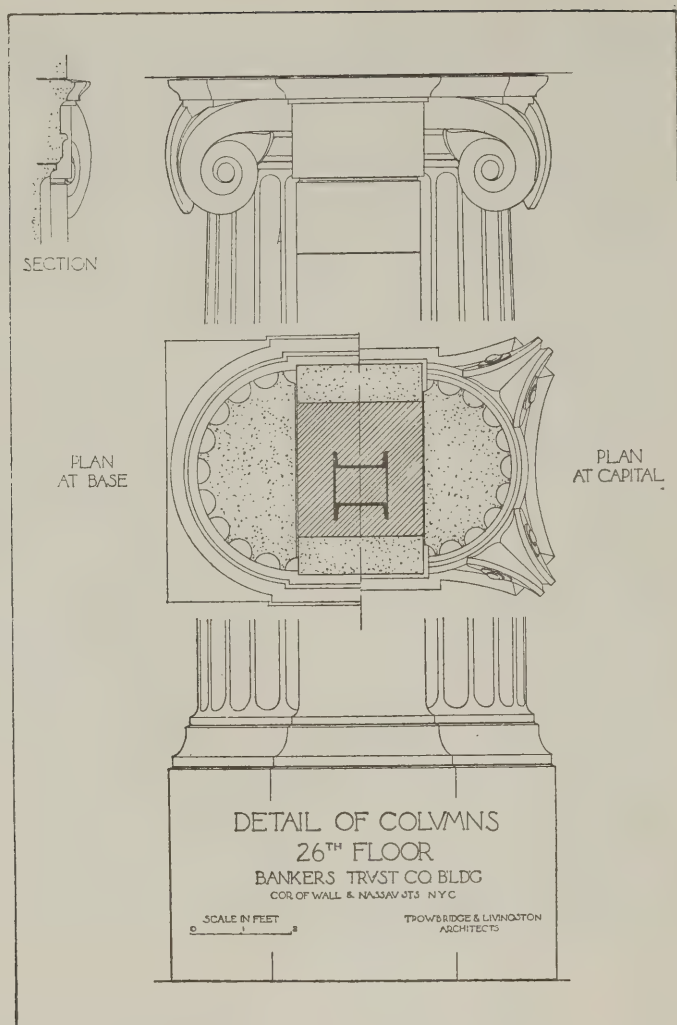
There is a great deal wrong with the building trade, quite apart from the insufficient quantity of business to fully occupy the capacity of firms engaged in the trade; but wide tendering is not conclusive evidence of slackness on the part of the contractors in either of the senses in which this word may be taken. Any competent and reasonable architect (at least in the North of England) inviting tenders from half a dozen firms, who have previously worked for him to their mutual satisfaction, will be certain to receive tenders with a maximum variation of, say, 10 per cent. A variation to this extent must always be expected in so complicated a matter as a building tender.

It is high time, however, that the organised builders addressed themselves to the new conditions (too numerous to fully set out within the limits of this letter), so as to secure a reasonable return for the capital, ability, and energy employed in the carrying on of their business.

Your recent articles should prove of great assistance to those members of the trade who for some time past, in season and out of season, have endeavoured to bring their fellow members and trade competitors to the position which you have



BANKERS' TRUST BUILDING, NEW YORK: VIEW IN BANKING ROOM.



taken up. I trust that you will continue to bring this matter prominently before those concerned, in which not only builders but architects and their clients, have a vital interest.

R. ARTHUR COSTAIN.

Blundellsands.

Cross Lighting and Ventilation.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—With some experience in building schools on the lines which Mr. Widdows has developed in Derbyshire, I fully bear out his contention of the advantages of cross-lighting and ventilation. I believe that the school at Alfreton, Derbyshire, illustrated in your issue of March 20th, 1907, was the first to be erected on the four-armed, radiating plan, locally known as the "windmill type."

This school is without bottom hoppers to the windows, and has other defects (since remedied by Mr. Widdows in his own work), which were partly due to the experimental nature of the plan and partly to a desire not to depart too widely from the department's building regulations then in force. The teachers' room is too small, for instance, and, in fact, a separate room was subsequently provided outside the building, which is undesirable; but, in the main, the class-rooms are successful.

I mention this school chiefly to point out that it is possible to compare the effect of cross-lighting side by side with rooms only partly cross-lighted; that is, with rooms lighted from the left hand chiefly, but having "borrowed" lights in the opposite corridor wall.

The comparison in the actual building is clearly in favour of direct cross-lighting, and can be seen at a glance.

There is sufficient light from the left-hand windows to the far desks to neutralise the shadows cast by the supplementary light from the right, and the general increase of brightness is unmistakable.

I have frequently observed the children at work in class-rooms grouped on the old rectangular plan round a central hall, and on dull days particularly there is a noticeable deficiency of light to the desks furthest from the window wall.

Nor is this at all surprising in rooms which are 23 ft. to 24 ft. wide. Whether this defect might be remedied by a large increase in the height and size of the windows, with the danger of approaching to "greenhouse" conditions in summer, and the risk of excessive cooling surface in winter, is another question. The point is that in practice rooms built on the customary plan are often deficient in light.

It is surely pressing an academic theory too far to argue that only left-hand light should be provided, even at the expense of a general deficiency in quantity.

On the question of ventilation, I can only say that a personal experience of living in a house with cross-ventilated rooms and bedrooms convinces one of their superior freshness and absence of "stiffness"; and after all it is reasonable to claim that there is as much to be said for the evidence of the physical senses in a matter of this kind as for scientific tests for chemical impurities and micro-organisms.

PERCY B. HOUFTON.

Abuses of the Workmen's Compensation Act.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Referring to your article under the above title in your issue of the 10th inst.: While agreeing entirely that the abuses to which you allude do exist, I regret to say that I cannot subscribe to your conclusion, as it does not unfortunately appear to be within the united powers of the insurance companies and of the organised employers to overcome them while the Act remains as it is.

The workmen's unions, I understand, are equally concerned at the growth of these abuses, and have urged by deputation to the Home Office that an inquiry should be made into the working of this Act, and that it should be strengthened in certain directions, especially as to making greater use of medical referees.

The deputation does not appear to have received much encouragement, while a similar request from the National Federation of Building Trades Employers, that a deputation should be received, met with even less. Apparently the legislative programme is already too full.

It appears, sir, that nothing effectual can be done until the Workmen's Compensation Act is overhauled and amended, so that medical referees shall be appointed and paid by the State, and shall devote themselves exclusively to their duties as referees; that the services of a medical referee shall be made use of by the Courts in all cases where medical questions as to capacity dependent on the physical condition of injured persons are concerned; that certain classes of permanent injuries to body or limbs shall be compensated by fixed sum, which should be paid irrespective of earning capacity.

If you can help to the attainment of these most necessary reforms, I feel sure the building trade will be very grateful.

A. G. WHITE,
Secretary, National Federation of
Building Trades Employers.

R.I.B.A. FINAL EXAMINATION.

To the list of students qualifying for the R.I.B.A. Final Examination, the name of Mr. R. A. Barber is now added under Subject III. (a). (See our issue for July 10th p. 38.)

THE UNIVERSITY OF LIVERPOOL

Examination Lists, July, 1912.

Faculty of Arts, School of Architecture
Degree of B.Arch.—Second Examination
Lakshminarasappa, S. H.; Sykes, A. R.

Certificate in Architecture (the names in each class are in alphabetical order).

First Class: Dodd, R. F.; Harper S. A.; Jones, S. S.; Lakshminarasappa S. H.; Sykes, A. R.; Thompson, W. H.

Second Class: Faraday, S.; Hill, G. N. Mehta, S. P.; Rutledge, J. W.

The following awards are made: The Holt Travelling Scholarship, W. H. Thompson; the Ravenhead Entrance Scholarship, F. Jenkins.

Students who obtain a first class certificate are exempted from the Intermediate Examination of the R.I.B.A.

NOTICE.—The Index to Vol. XXXV. is issued gratis as a supplement to the present number.

MAGAZINES AND REVIEWS.

The "Burlington Magazine" starts with some "Notes on Chinese Painting," by Mr. Lewis Einstein, in which it is innocuously admitted that "the present passion for fresh æsthetic sensations has seized on the wide possibilities offered by the arts of China." That is no doubt the real secret of the present enthusiasm manifested about Chinese painting, and the effort to believe that it is really superior to European art: it is a new fashion. It appears from the article that the "heathen thine" is quite equal to making the most of the occasion, and that examples of the particular style of art asked for will always be forthcoming if money enough is offered; if not in stock, they can be manufactured to order. In an article on "The Newcastle and Ruthwell crosses," Sir Martin Conway upholds, with some sound reasoning, the seventh century origin of these works. "Chinese Cloisonné Enamel" (a class of art in which China is really superior) is dealt with by Mr. R. L. Robson, in an article accompanied by some fine illustrations. Mr. Vallance's "Early Furniture" is illustrated by some English fifteenth-century coffer of various styles of design, one of them illustrating that the author characterises as "gigantic ship-carving"; a Flemish coffer of the same century is an example of a strictly architectural treatment. The fifteenth-century English coffer from Mr. J. D. Hillips's collection is a remarkable example in the bold and free character of its front design, showing two scroll-shaped lants with large flower-discs and a swan hucking at one of them with its beak—at least, it looks as if meant for a swan. It is unusual to find this kind of free design in English wooden coffers, the treatment of which is generally of a more geometric type. The frontispiece of the number is a photograph of a fine Late Gothic livery cupboard, of rather unusual design, recently presented to the South Kensington Museum.

In the "Nineteenth Century" Mr. Robert Fowler writes an excellent and quaint article on the text, "Is Art a failure?" It is not evident at once what he is driving at, but ultimately we find the article is a humorous attack on the whole school of Impressionists, post-Impressionists, and Futurists, and the writer comes to the conclusion that we may as well wend our way to the Academy in the good old way and admire the works of the painters of the day; "that the pictures are newly painted will not affect our estimate—or our pleasure." That is some of the best common-sense on the subject of modern art that we have met with for some time in a magazine article.

In the "English Review" Mr. Walter Sickert writes a paper under the title "Mural Decoration," a title which has got much to do with the real subject of the paper, except that it has apparently been prompted by the occasion of the competition for a mural painting prize held at Chelsea and its manifest failure. Otherwise, the real theme of his paper is the mischief of encouraging people into art schools who have not really the talent for doing anything good in art, and the necessity for those who really aim at being artists to begin as early as possible to learn to draw accurately. "To study drawing is nothing more than to accustom the eye to estimate, and the hand to record, the inclination of a visible line in the 180 deg. of two right angles. When

hand and eye are broken in to register these inclinations a man can draw; and his drawing will be equally applicable to Joan of Arc, to an elephant, or a cumulus cloud. Proportion and perspective follow inevitably on rightness of direction," and the effort in art schools should be, not to keep up the numbers, but to keep the right men there. It is our misfortune not to like Mr. Sickert's paintings, but with his sentiments in print we entirely agree.

"Scribner" contains a long illustrated article on "The Garden Cities of England," mainly illustrated by Letchworth and Hampstead. We do not know whether the writer, Mr. F. C. Howe, is an Englishman or an American; if the latter, it is important to note that these experiments in garden cities have appeared to him in so favourable a light. This is followed by an article on "Model Towns in America," which may interest English readers, in view of the attention at present given to the subject, though we have nothing to learn from America in regard to town planning.

IN PARLIAMENT.

(By Our Press Gallery Representative.)

Monuments and Statues in London.

At question-time, in the House of Commons, Mr. J. King asked the representative of the Office of Works whether a bronze statue to Lord Clive was to be erected in Whitehall; if so, on what grounds the decision was taken to erect another monument in this much-used thoroughfare, and whether the exact site chosen could be indicated.

Mr. Wedgwood Benn replied: The statue is to be erected temporarily in the garden attached to Gwydyr House. Afterwards it is proposed to remove it to the west end of King Charles Street. It seemed a pity not to exhibit this fine work of art before the completion of the public offices.

Mr. King asked the hon. gentleman whether any application had been received to erect a monument in London to Captain Cook, the great navigator and discoverer of Australia; and, if so, what answer had been given.

Mr. Wedgwood Benn: Yes, sir. Permission has been granted for the erection of the statue on the west side of the Admiralty Arch and in close proximity to it. It will form part of the general scheme of decoration. Sir Aston Webb always intended to place a statue on this spot.

The Decoration of the Houses of Parliament.

Mr. Wedgwood Benn informed Mr. King that the picture exhibited in the Royal Academy and entitled "The Tumult in the House of Commons," was to be placed in St. Stephen's Hall. The picture was the gift of the Royal Academy, to whom the thanks of the Government were due. It had been painted by an eminent member of the Academy, and would be placed in position when the exhibition was closed. The offer was accepted in continuation of the general scheme for the decoration of the Houses of Parliament, of which the frescoes so recently placed in the passage leading from the Central Lobby to the grand staircase were so successful a part. A number of subjects for treatment have been selected by some historical experts.

The Office of Works and Contractors.

Mr. Pointer enquired of the representative of the Office of Works what steps

were being taken by that Department to secure that all work done by contractors, especially work which could not be easily examined when a job was completed, had been properly and efficiently executed according to the contract.

Mr. Wedgwood Benn said in reply: Clerks of works are appointed to see that all work is properly and efficiently executed, while in addition a building inspector pays surprise visits whilst the work is in progress. The architects in charge exercise general supervision over all building works. The Board's contracts provide that builders shall give notice to the architect or clerk of works when it is their intention to cover up any portion of the work, and if any work is so covered or hidden without written authority the builders may be required to uncover the same at their own expense.

The Services of the Board of Works.

Mr. Wedgwood Benn informed Mr. Goldsmith recently, in the House of Commons, that the services performed by the Board of Works were of a most comprehensive and varied character, and the expenditure on them had lately been about 2½ millions annually.

Doncaster Housing Scheme.

Mr. Jowett (Labour Party), in the House of Commons asked the President of the Local Government Board, whether he had recently sanctioned a housing scheme promoted by the Doncaster Corporation, in which there was provision made for housing people in flats at Wheatley; whether, in the scheme originally submitted to him, there were no dwellings in flats; whether the alteration was made at his suggestion; and, if so, why, having regard to the fact that Doncaster was favourably situated where land could be obtained for self-contained dwellings, he had interfered in the matter.

Mr. Burns replied: Exception was taken to the original scheme of the corporation for providing accommodation for persons displaced by works under the corporation's local Acts of 1904 and 1908, chiefly on the ground of there being strong objections to the site. Amended sites have been selected and approved. One of them is in Wheatley. In view of the rents paid by many of the persons displaced and the class of persons to be provided for, I stated that the corporation should consider the possibility of providing either a certain number of small dwellings in flats or some houses with less than three bedrooms which could be let at a lower rent than 4s. 9d. a week proposed by the corporation. The corporation have submitted an amended scheme, which includes the provision of thirty-six separate dwellings in eighteen houses, being two dwellings in each house, with the view of the same being let at from 2s. 6d. to 4s. a week. I have approved the principle of erecting these dwellings, but have returned the plans to the corporation for amendment in certain respects.

Royal Scottish Museum (Extension) Bill.

The Royal Scottish Museum (Extension) Bill was read a second time in the House of Commons on Tuesday, July 9. Its object is to enable land to be acquired for the extension of the Royal Scottish Museum in Edinburgh. Mr. Wedgwood Benn explained that at present there was not enough room in the Museum for the exhibits to be properly shown. The triangular block of buildings at the back of the Museum was to be acquired, back as far as Brighton Street and Lothian Street. A Select Committee of five members will consider the terms of the Bill.

COMPETITIONS.

*New Offices of the Port of London
Authority.*

The Port of London Authority having considered the final plans for their new head offices about to be erected in Trinity Square, E.C., sent in competition, have selected, on the advice of their assessor, Sir Aston Webb, C.B., R.A., the design submitted by Mr. Edwin Cooper, F.R.I.B.A., of 12, Gray's Inn Square, W.C. The six designs submitted in the final competition are being publicly exhibited at the river offices of the authority, Victoria Embankment, E.C., from July 15th to July 30th, inclusive, between the hours of 10 a.m. and 4 p.m. (1 p.m. on Saturdays), with the exception of Wednesday, July 17th, when the designs will be on view from 2 to 4 p.m. It may be recalled that in the first instance 170 designs were received, and that the six selected to take part in this final competition were: Mr. Robert Atkinson, Mr. Edwin Cooper, Messrs. Lanchester and Rickards, Mr. Reginald Truelove, Messrs. Wallis and Bowden, and Mr. Ernest W. Wray. These competitors each receive an honorarium of two hundred guineas.

Edinburgh Memorial to King Edward.

The design of Mr. G. Washington Browne, R.S.A., 24, Charlotte Street, Edinburgh, has been adopted for the Scottish National Memorial to King Edward, with Mr. Albert H. Hodge as sculptor.

*Sheffield Memorial Institute for Crippled
Children.*

Mr. E. M. Gibbs and Mr. F. E. P. Edwards, the assessors in this competition, have made the following awards, which have been confirmed by the committee: 1, Mr. A. W. Kenyon; 2, Mr. W. J. Hale; 3, Messrs. Hall and Fenton—all of Sheffield.

*Rhos Chair Eisteddfod Cottage
Competition.*

The following are the winners in this competition for a design for a pair of cottages: Equal first—Mr. J. D. Arfon Jones, Highbury, London, N.; Mr. T. Vicars Henshaw, Cheshire. Second—Mr. E. W. Stubbs, South Croydon, S.E.

LIST OF COMPETITIONS OPEN.

JULY 22. TWO HOUSES, CORK.—Plans are invited for two semi-detached houses, to be erected on the grounds of the District Lunatic Asylum, Cork, at a cost not to exceed £600 each. A prize of £10 will be awarded to the architect whose design is considered most suitable. Particulars from the Resident Medical Superintendent, District Lunatic Asylum, Cork.

AUGUST 6. FIRE BRIGADE STATION, CARDIFF.—Cardiff Corporation invite designs and estimates for a fire brigade station. Mr. A. Marshall Mackenzie, A.R.S.A., F.R.I.B.A., will act as assessor. Particulars on deposit of two guineas (returnable) from J. L. Wheatley, Town Clerk, City Hall, Cardiff.

AUGUST 30. SAXON SNELL PRIZE.—Fifty guineas, with medal, for essay on hospital construction. Apply, Sanitary Institute, 90, Buckingham Palace Road.

SEPTEMBER 1. MUNICIPAL OFFICES, GOOLE.—Premiums, £30 and £15. Particulars, Mr. R. Tyson, Council Offices.

SEPTEMBER 9. COUNCIL SCHOOL, CHORLEY.—The Education Committee of the Borough of Chorley invite designs for a Council School for about 500 children.

Conditions (£2 2s., returnable) from John Mills, Town Clerk.

SEPTEMBER 30. NEW BUILDINGS, UNIVERSITY COLLEGE, DUBLIN.—The Governing Body of the University College, Dublin, invite architects to submit designs for new college buildings. Competition is limited to architects living and practising in Ireland. Mr. H. T. Hare, F.R.I.B.A., has been appointed the assessor. Applications, accompanied by a cheque for two guineas (returnable), to J. W. Bacon, M.A., Secretary and Bursar, 86, St. Stephen's Green, Dublin.

OCTOBER 1. KING EDWARD MONUMENT, OTTAWA.—Sketch, models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

OCTOBER 31. TOWN PLANNING, HUDDERSFIELD.—The Housing and Town Planning Committee of Huddersfield Corporation offer premiums of 100, 50, and 25 guineas for laying out certain areas. Conditions (two guineas, returnable) from K. F. Campbell, M.Inst.C.E., Borough Engineer, 1, Peel Street, Huddersfield.

NO DATE. EXTENSION OF MUNICIPAL BUILDINGS, GLASGOW.—The corporation invite preliminary sketch designs for an extension of their municipal buildings. From the sketches submitted, the authors of not more than five designs will be selected for a final competition, at an honorarium of one hundred guineas each. Mr. John J. Burnet, LL.D., A.R.S.A., is assessor. Conditions (one guinea, returnable) from J. Lindsay, Town Clerk, City Chambers, Glasgow.

OUR PLATE.

Old Dutch Architecture in South Africa

In an article in our issue of June 5th p. 575, we quoted from the "African Architect" an interesting account of the Dutch architecture of South Africa, and gave illustrations of some characteristic examples. Our Centre Plate this week shows further specimens of this peculiar genus, which, on the whole, well illustrates the abiding charm, the quality of repose, the absence of pretension that reflect the strongly marked racial character of the early Dutch settlers. In every instance there is at least some indication of the fondness for a decorated gable, which in its form is always strongly suggestive of Flemish origin; while the pediment to the wine store at Groot Constantia becomes truly artistic in the grace, fancy, and vigour with which it expresses the purpose of the building. In "Tokai" and "Mor gensteir" is seen the fondness for sturdy pillars, which here support nothing heavier than the trellis along which creepers are trained for the sake of their grateful shade. The entrance door is always stately and dignified. The prototype of the Dutch homesteads at the Cape, however, is found in Constantia. Like all the others, it is built of small bricks and plastered. The plaster figure in the gable symbolises "Constancy," and is attributed to the sculptor Anrijt, who also probably executed the fine Bacchanalian orgi with which the pediment of the wine store is decorated.



A typical example of the charming old Dutch homesteads of South Africa. For other examples, see Centre Plate.

"ELSENBERG," STELLENBOSCH, SOUTH AFRICA



Tokai, Cape.



Morgensteir, Somerset West.



Wine Store, Groot Constantia, Cape.



Groot Constantia, Cape,

CONCRETE AND STEEL SECTION.

(MONTHLY.)

In last week's issue of *Adaptability of Reinforced Concrete* the Journal there is a short paragraph headed "Reinforced Concrete Boats!" The note of admiration after it is of indeterminate significance, and might possibly have been interpreted as suggesting doubt or derision had the paragraph appeared elsewhere with this curiously insinuating mark attached; but in this instance the note of admiration proper was no doubt intended. Reinforced-concrete boats, indeed, are no novelty. In fact, as a writer in the "Daily Telegraph" brought freshly to mind the other day, one of the earliest examples of reinforcement was a boat of concrete and iron shown at the Paris Exhibition in 1855—ten years before M. Monier patented the earliest of the systems. It was perhaps somewhat unfortunate that the exhibit took this form, as it may have had the effect of diverting the public mind from the more practicable employment of the system, and of suggesting that it was nothing more than a freak of fancy. In case it may still be supposed that the frequent records of curious applications of reinforced concrete tend to discredit the system, perhaps it may be as well to observe that surely the wildest of them do no real harm, but, on the contrary, serve to awaken or to maintain interest in the subject, and to emphasise the almost indefinite adaptability of reinforced concrete. Reinforced-concrete boats are, we believe, demonstrably feasible proposition, and it would not be surprising to hear that the company which has been formed in Antwerp to work the new patent for their construction had achieved entire success. At all events, those who are conversant with the history of marine architecture, and those persons who are old enough to remember the incredulity with which the first proposals to build iron ships were received, will not be disposed to laugh at the idea of reinforced-concrete boats.

The daily newspaper article to which reference has been made is a welcome symptom of the rapidly growing popularity of a system that, to the average reader of the daily paper, is still new and strange. The article extended to nearly a column in length, and expounded the subject in the simplest manner compatible with a fair understanding of its principles. In tracing the history of the system, the writer very properly explains that some early failures which may have had the mischievous effect of destroying confidence in the system, and of which the dim traditions may still linger to its detriment, were caused by the unwise experiments of unaccredited builders, who did almost incredibly foolish things with galvanised wire, old bed-laths, and other weird forms of reinforcement, with the natural result that their structures came to grief. The writer's comment on these failures is that "reinforced concrete cannot be put up by guesswork or rule of thumb, but each part of a structure must be scientifically designed for the loads which it has to support. When this is done, and proper care is taken in the selection of materials and the construction of the work, failures with

the new material are as rare, if not rarer, than with other modes of construction."

The terminology of the subject not being very difficult to understand, no doubt the writer is safe in taking the general public into his confidence by telling them that concrete being about ten times as strong in compression as in tension, a beam of plain concrete will break when only one-tenth of its compressive strength is reached: the terms compression and tension being fortunately as self-elucidatory as the "positive" and "negative" of the early stages of the study of electrical phenomena. He proceeds to say that, "roughly, steel costs sixty times as much as concrete, bulk for bulk, after allowing for the cost of fixing. It is, however, thirty times as strong in compression; so we see that for a pillar or strut of given strength the cost in steel is about twice that in concrete. When used in tension, however, concrete is only about 1-300th of the strength of steel. It follows, then, that, used in tension concrete would be five times as expensive as steel, seeing that the latter costs sixty times as much as the former. By combining the two materials, so that concrete resists compression, while steel rods are introduced to take tension and shear, a composite material possessing the advantages of both is obtained, and also the cost is from ten to twenty per cent. lower than that of steel."

Simple as they are, the man in the street will probably skip those calculations, and pass on to the non-technical enumeration of the advantages of reinforced concrete, and, taking it for granted that the co-efficients of expansion of concrete and steel being about the same there is no tendency for the two materials to split apart with change of temperature, will be prepared to believe that of all fire-resisting materials of construction, reinforced concrete is unquestionably the best—not merely as a matter of theory, but demonstrably from actual experience, as in the celebrated case of the behaviour of the Fidelity building in the 1904 fire at Baltimore, which case, however, may not be known to all. It is thus described: "This structure had reinforced columns, beams, and floors, the outer walls being constructed of brickwork. The front wall was supported on cast-iron columns and steelwork. After the fire, which was severe enough to melt brass fittings in the building, the reinforced-concrete framework was practically intact, while some of the brick walls and the whole of the front were demolished. All the other buildings in the same block were utterly wrecked. After the fire one of the floors was tested with a greater load than that for which it was designed, with satisfactory results." The citation of such instances is much more convincing to the general public than mere theorising, and it is here recalled for what it may be worth say in the hands of a reinforced-concrete expert endeavouring to secure a hesitating client. The absence of more modern instances would admit of the quite legitimate explanation that re-

inforced concrete buildings are so seldom involved in fire, owing to their effectual resistance to it both without and within.

The use of tufa or volcanic ash in the cement used in reinforced-concrete work in Los Angeles is exciting a good deal of more or less adverse criticism. This adulteration has been used to a considerable extent on the Los Angeles aqueduct; and while it is admitted that under standard tests the material has hitherto shown satisfactory physical properties, concrete specialists do not hesitate to declare that it ought not to be used on structures of which the failure would have serious consequences. This particular form of sophistication may or may not be justified by experience, but this is a point which time and event should be allowed to prove in a perfectly harmless way, without the slightest risk to life or limb. Even should it eventually come safely through every ordeal, its negative virtue would not be enough to warrant its use, if, as may be supposed, cheapness is its only recommendation. Any material addition to concrete should possess some absolute and positive inherent quality before its use in structural work can be condoned; and in the absence of the only safe proofs of its entire harmlessness, its use involves more recklessness than one likes to see associated with reinforced concrete work; in which, to give them due credit, the experts commonly elect to err on the side of over-cautiousness in all respects, more especially in their very jealous scrupulosity with regard to the purity of cement, which they justly insist should always be above suspicion, as the reputable makers are very keen to make certain that it shall be.

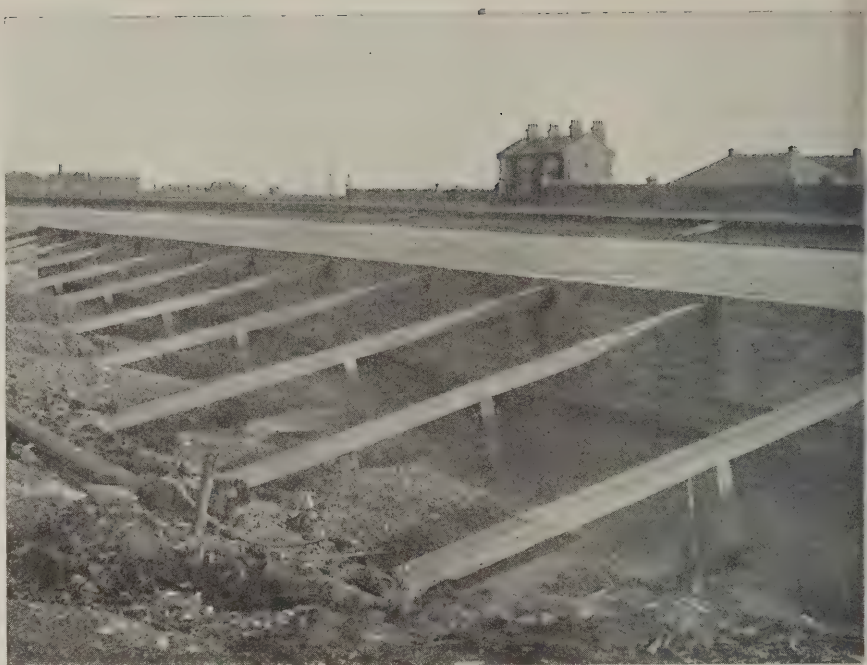
An engineering expert, observing that the specifications for concrete are nearly identical with those that were drawn up in the days when the wet mix was forbidden, and it was insisted that the mixture should be dry and thoroughly rammed, asks: "In a wet mix where no ramming is required, why limit the gravel or broken stone to 2½ in. in size? Why not let the size of the work and of the mixing plant limit the size of stone used?" This expert maintains that, to-day, when it is not necessary to leave a 6-in. space between the large stone in order to tamp, as there is no tamping, there is no reason why we should prohibit the use of stone between the sizes of 2½ in. and 12 in. In the mixture he recommends the amount of sand is one-half the amount of stone, which is limited to 2½ in. The majority of gravel beds run one of sand to two of stone, and when this is the case the run of bed can be used. Then the proportions would be 1 of cement, 4½ run of bed, and 8 parts of stone varying in size from 4 in. to 6 in. He claims that you thus get 1 + 2 + 4 = 4.5 cu. ft., 1 + 2 + 4 + 8 = 8.9 cu. ft.; we have 1 cu. ft. of cement in 8.9 cu. ft. of concrete or 0.75 bbl. to the yard. The mortar is a richer mixture, and at the same time one half-barrel of cement per yard of concrete is saved by the coarser mixture.

REINFORCED CONCRETE WHARF, PORTSLADE.

An interesting example of reinforced concrete wharf construction has recently been completed by D. G. Somerville and Co., Ltd., of Westminster, at Portslade, near Brighton, particulars and illustrations of which we now give. The site, which adjoins the canal, was originally a sloping bank of shingle and chalk, and it was proposed to build a timber wharf, filling in behind with the dredged material from the new berth. The building owners, however, on obtaining alternative tenders for timber and reinforced concrete, found that, apart altogether from the great saving in maintenance of a concrete wharf, the first cost was less than that of timber, and Messrs. D. G. Somerville and Co., Ltd.'s, scheme was adopted.

The general design consists of king piles 12 in. square, driven 20 ft. into the ground, and spaced at 20 ft. centres. Between these, sheet piles, 18 in. wide by 6 in. thick, were driven 18 ft. into the clay. The heads of the king and sheet piles were then cut down 2 ft., leaving the reinforcing bars exposed. The king piles were then built up in situ in the form of columns and the sheet piles carried up in the form of a solid wall panel 5 in. thick, the whole being finished with a capping beam, which formed the edge of the wharf. Each king pile was tied back to a heavy concrete anchorage by two reinforced concrete ties, as shown in the illustration. Steel tubes were left in the king piles and columns, over 4 ft., and timber fenders forming rubbing pieces were bolted to the front of the main piles by means of bolts passing through these tubes. On completion of the reinforced-concrete work, the ground behind the wall was filled in with clinker and chalk, which consolidated into a solid mass and formed a level quay suitable for storage. Messrs. D. G. Somerville and Co., Ltd., employed the Coignet system for the reinforcing.

The first view shows the back of the wharf, with ties to anchor piles; the second, reinforced concrete sheet piles being driven in panels between king piles.



REINFORCED CONCRETE WHARF, PORTSLADE: BACK OF WHARF.

The cost of the work is exceptionally low, being only £7 10s. per foot run of quay wall.

DESIGNING GRILLAGE FOUNDATIONS FOR STANCHIONS.

BY C. E. BARKER.

To obviate the necessity for deep foundations, which in many cases would involve great expense, steel beam grillages are now generally used to support the main stanchions or columns of skeleton frame buildings. A solid bed of concrete is prepared on the space excavated for the purpose, and tiers of I-steel beams are then placed on the concrete bed.

The beams themselves are so arranged that concrete can be well rammed between

them, the spacing being kept uniform means of long bolts and distance pieces as indicated by the illustration.

Although the mode of using the beams is familiar, the method of calculating the sizes is not well known to designers. as an example, let us assume that:—

S = supporting capacity of the ground

L = load in tons on the stanchion.

B = number of beams in top tier.

b = number on beams in bottom tier

p^1 = projection of top tier of beams beyond stanchion base.

p^2 = projection of second tier of beams beyond first tier.

$$\text{Area of foundation required} = \frac{L}{S}$$

Load on each beam in the top tier =

Load on each beam in bottom tier =



REINFORCED CONCRETE WHARF, PORTSLADE: DRIVING THE PILES.

Supposing then, we require to design a grillage foundation to support a load of 80 tons upon ground that has a supporting capacity of 2 tons per square foot. By the formulæ given above, $\frac{80}{2} = 40$ square feet.

The foundation grillage would therefore be made 6 ft. 6 in. square.

Let the base of the stanchion be 2 ft. 6 in. square, and 3 beams used in the top tier, and 7 beams in the underneath tier; we obtain by the formulæ, p^1 and $p^2 = 2$ ft. Load on each beam in the top tier $= \frac{80}{3} = 26.6$, or say 27 tons.

Load on each beam in the bottom tier $= \frac{80}{7} = 11.4$ tons.

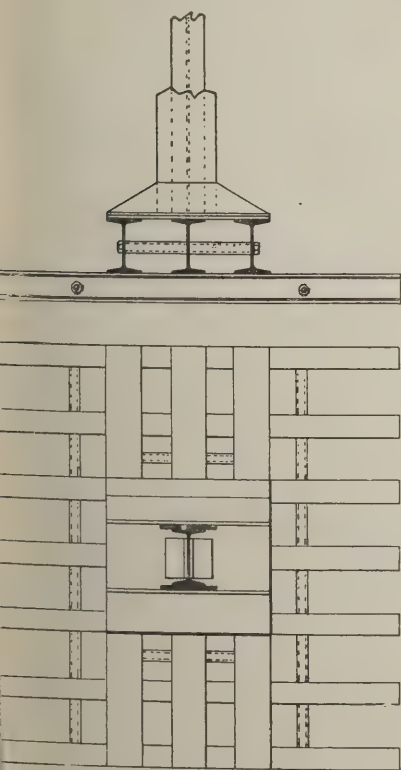
The loads on the beams are therefore distributed over two sets of cantilevers each being of 2 ft. span.

Now refer to a table giving the strengths of beams with an evenly distributed load over a span of 2 ft., bearing in mind that a cantilever loaded with a distributed load will only support one quarter of the tabular load of a beam supported at both ends. Thus it will be seen that we require to add a beam of 2 ft. span that will support distributed load of 54 tons, or what amounts to the same thing, a beam of 4 ft. span that will support a load of 13½ tons. This is for the top tier.

The nearest beam will be found to be 8 in. x 6 in. B.S.B.

For the bottom tier we require a beam that will support 5.7 tons distributed over a span of 8 ft., and for this we must use 5 in. x 4½ in. B.S.B.

Thus the composition of the complete grillage foundation would be three 8 in. x 6 in. x 35 lb. per foot British Standard Beams for the top tier, and seven 5 in. x 4½ in. x 18 lb. per foot S.B.'s. for the bottom tier, as is clearly shown by the illustration.



GRILLAGE FOUNDATIONS FOR
STANCHIONS.

THE CHEAP DWELLINGS PROBLEM.

At a week-end conference, promoted by the York Health and Housing Reform Association, held in the Pavilion at the Homestead, Clifton, York, the residence of Mr. B. Seeborn Rowntree, the Lord Mayor of York, who presided, said that he was rather sceptical of the possibility of housing unskilled workers in adequate, comfortable, and pleasant homes at rents which they could afford to pay.

Mr. Raymond Unwin, architect to the Garden City, Letchworth, opened a discussion on the possibility of cottage homes at rents which the unskilled workers could pay. Taking the minimum cottage—one with a decent living room and scullery, and three bedrooms—he said if they planned square, which was the most economical method, it would be 20 by 20 and about 23 ft. in height. This would give 9,200 cubic feet, and they found the cost of building averaged about 4d. or 5d. per cubic foot, which meant in round figures £150 or £200. On the £150 house, land and other charges raised the capital outlay to about £180; while in the case of the £200 house in a better district the capital cost would be about £275. To meet the cost of repairs and empties and other incidentals the gross return would have to be from 5½ to 7½ per cent., which was equivalent to a rental of from 3s. 10d. to 4s. 10d. weekly. He contended, on the question of reducing the cost, that a half per cent. reduction in the interest on the capital was of more value than any reduction in the price of the land or for the cost of the building.

Mr. G. P. Anderson protested against any housing scheme which involved putting baths in the floor in front of the kitchen fireplace or in the scullery. There was as much need for privacy in the homes of the unskilled labourers as in other houses.

Mr. W. H. Farrar complained that some "model cottages" were so small that one could hardly walk round the table.

Mr. Unwin, replying, said that in the main landowners lost money by crowding too many houses on the land. He thought twelve houses to the acre was a useful limit. As regards rates, the present system was quite inequitable, and the smaller house paid more in proportion than the larger one. He agreed that it was impossible to provide suitable houses at rents which the workers in receipt of very low wages could pay, and the only remedy was to raise the wages.

At the evening session, presided over by Alderman S. W. Meyer, Mr. Seeborn Rowntree opened a discussion on "How Can Overcrowding be Remedied?" Two remedies, he said, were open. One was to build houses more cheaply and the other was to give bigger incomes, or, at any rate, so to arrange matters that the workers had a larger sum available for house rent. Housing reformers should devote their attention to decentralisation, one effect of which was to reduce rents in towns. He advocated the provision of houses in the country, remarking that the solution of the problem lay in giving every house an adequate piece of land. He suggested that a reasonably suitable house, with three bedrooms, could be secured at a gross rental of £11 a year, or 4s. 3d. a week. They must take into consideration the value of the foodstuffs raised on the gardens, and he estimated, as the result of returns of twenty-four allotments for three years, that the value of the garden

stuff raised on a quarter of an acre would be equivalent to two shillings a week; so that it reduced the rent to 2s. 3d. per week. Mr. Rowntree advocated the provision of houses in the country by the municipalities, who could borrow money on the security of the rates.

At the Sunday afternoon session, Alderman W. Thompson, of Richmond, chairman of the National Housing and Town Planning Council, discussed the practical measures by which the objects of the two previous discussions could be realised. In answering the question: "Could the English workmen be tempted by better means of transit to leave their cottages in the crowded courts and alleys of the towns and go to live in the country away from their work?" he said that the experience of the last fifteen years in London showed that the provision of the means of transit created traffic, and the last census showed that instead of London growing, the outer fringe had enjoyed all the growth which formerly belonged to London itself. He advocated that the provision of the means of communication should precede the movement of the people. It seemed to him that the best way of providing houses outside the city was by co-operation between the municipalities and private enterprise.

WAGES MOVEMENTS AT CAMBRIDGE AND RUGBY.

At a meeting of the members of the Cambridge Master Builders' Association it was decided, in view of the increased cost of living, to raise the wages of all mechanics and labourers in their employ in Cambridge one halfpenny per hour per man, the increase to commence on January 1st, 1913. The various trades connected with the building trade are all treated alike in the matter of the increase. The following is the rate of wages per hour paid at the present time: Masons, plasterers, and plumbers, 8½d., carpenters and bricklayers 8d., painters 6½d., labourers 5d.

It is estimated that the rise in wages will affect about 1,500 men. Of these 1,000 are employed by the Associated Masters. It is worth noting that this decision on the part of the masters is entirely voluntary. A standard rate of wages was fixed by agreement between masters and men in 1897, but in 1900 the amount was raised ½d. per hour voluntarily by the employers.

The Rugby labourers have struck for an increase from 5d. an hour to 6d. Hopes had been entertained that terms of settlement might be agreed upon, but the men affirm they will not be satisfied with the 5½d. an hour offered by the employers as a compromise, as they state smaller builders have hitherto been paying their labourers that rate of wage, and it is only the larger firms who have given 5d. The reason for the strike is to secure 6d. an hour as the uniform rate for labourers in the town, and even then it is said to be less than is received by men following like occupations at Coventry, Leicester, and other Midland centres. A full week's work at 5d. an hour brings in 23s. 6d., but as in wet and frosty weather time is lost the labourers affirm that they seldom make as much and that the average for the year does not exceed 14s. a week. Two of the smaller builders have asked their labourers to return to work, having promised them 6d. an hour if they will do so.

ECCENTRICALLY LOADED REINFORCED-CONCRETE PILLARS.

BY W. CYRIL COCKING.

The author believes that the practical method here described for calculating the strengths of eccentrically loaded reinforced-concrete pillars will show that the common method of calculation gives higher stresses than those that are actually induced in a pillar under eccentric loading.

THIS subject appears to have been somewhat neglected when one compares the rapid strides that have been made in other branches of investigation of reinforced-concrete. The following methods are original so far as the writer knows, and are suggested for practical use. They give results that seem to show that the common method of calculation gives higher stresses than those that are actually induced in a pillar under eccentric loading. Now this is a very important point, and requires confirmation by the results of exhaustive experiments.

The fundamental principle, which we have stated again on going into the different cases of eccentric loading, is briefly this: To obtain stability, the centre of gravity of the eccentric load must be on the same axis as the centroid of the stress diagram (or in other words the centroid of the compressions), and in the case when the eccentricity is such that tensile stresses are induced in the reinforcement on the opposite side of the pillar to that which the load is applied the centre of gravity of the eccentric load and the counterbalance (which is the tensile force) must be on the same axis as the centroid of the compressions, or the area of the stress diagram on the compression side.

We have rather laboured this point, but it is the crux of the whole matter, and if fully appreciated and accepted makes what follows quite simple.

It can be shown that this principle and method of calculation can be applied with

considerable saving of labour in the design of arched structures.

We would call attention to the following important points which should be borne in mind when designing :

(a) Care should be taken that when there are tensile stresses the rods in tension should be well carried down into the beam, pillar, or foundations immediately under the eccentrically loaded pillar, otherwise cracks may develop round the lower portion of the pillar or cause an initial deflection.

(b) The base of an eccentrically loaded pillar should be so designed that the centre of gravity of the eccentric load is on the same axis as the centroid of the area of the base, thus putting an equal pressure on the soil or other foundation, in no case should the axis of the load be outside the middle third in a rectangular base.

(c) It is clear from the fundamental principle that if an eccentrically loaded pillar is carried by one or several tiers of pillars with centric loads that the effect of the eccentricity is retained right down to the base of the lowest tier. Though the centric loads on the lower pillars may considerably reduce the effect of the eccentricity, it is a point which should not be neglected, especially when the eccentric load is heavy compared with the centric loads. This last point is contrary to the L.C.C. regulations.

Case "A"

When the eccentricity of load, or the equivalent eccentricity when there are

both axial and eccentric loads, is such that no tensile stresses are induced.

The following method is based on the principle that the centroid point of the stress diagram must coincide with the eccentric point, or point of application of the eccentric load. It will readily be seen that the above principle must be true to obtain stability.

As these formulæ are to be used in conjunction with the L.C.C. regulations we would point out that item No. 101 states that A_e = Effective area of the pillar is the area bounded by the lateral reinforcement measured to the inside of the hooping.

To somewhat simplify our formulæ we will take d the effective depth to be from centres of reinforcement A_e and A_t , and to make up for the reduced area instead of $(m - \frac{1}{2})$ we will write m .

Considering the diagrams shown, our fundamental principle states that

$$x = \frac{\frac{cbd^2}{2} - (c - c') \frac{bd^2}{2} + c m A_e d}{\frac{cbd - (c - c') \frac{bd}{2}}{2} + m (A_e c + A_t c')}$$

therefore $c' = \frac{c \left[b d \left(\frac{d}{3} - \frac{x}{2} \right) + m A_e (d - x) \right]}{b d \left(\frac{x}{2} - \frac{d}{6} \right) + m A_t x}$

or when $A_e = r_e b d$ and $A_t = r_t b d$ then $c' = \frac{c \left[\frac{d}{3} + m r_e (d - x) - \frac{x}{2} \right]}{\frac{x}{2} + m r_t x - \frac{d}{6}}$

When c' is zero $x = \frac{\frac{bd^2}{3} + m A_e d}{\frac{bd}{2} + m A_e}$ or $\frac{\frac{d}{3} + m r_e d}{\frac{1}{2} + m r_e}$

The value of C will be given by the formula $W_s u [1 + fsv]$ (See items 99, 100 and 102. L.C.C. Regulations.)

Given c and c' , then $P = \frac{c + c'}{2} \left[b d + m (A_e + A_t) \right]$ when the cross section of pillar is symmetrical.

From formula (4) we obtain the following useful formula that

$$c' = \frac{2 P}{b d + m (A_e + A_t)} - c$$

Example.

We have a load of 54,000 lbs. to carry the load having an eccentricity $x = \frac{d}{2}$. We propose to use a cross section having $d = 10"$, $b = 11"$, $c = 600$ lbs./in.² reinforced with four 1" dia. rods, one each corner.

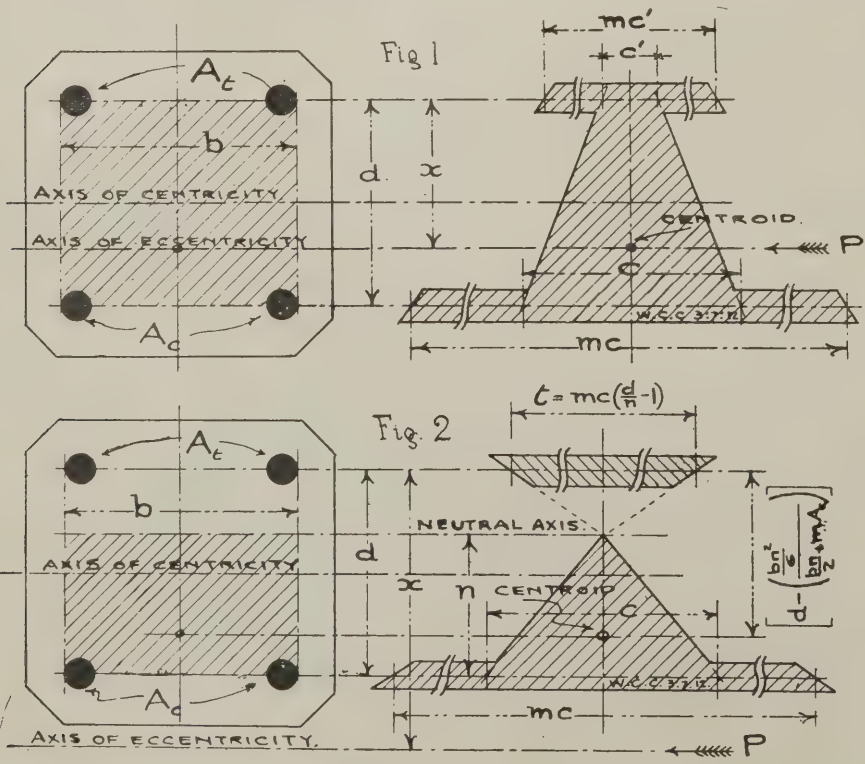
Is the section satisfactory? From formula (5) $c' = \frac{2 \times 54000}{(11 \times 10) + 15 (1.5708 + 1.5708)} - 600 = 87.3$ lbs./in.² nearly.

Having found what the stresses would be, we now find what they should be.

From formula (1) $c' = 600 \left[11 \times 10 \left(\frac{10}{3} - \frac{7}{2} \right) + 15 \times 1.5708 \times 7 \right] \div \left[11 \times 10 \left(\frac{7}{2} - \frac{10}{6} \right) + 15 \times 1.5708 \times 7 \right]$

$\therefore C = 85.7$ lbs./in.² nearly. The error of 1.9 per cent. is small enough to ignore.

To find the exact eccentric load



ould give the ascertained stresses use
formula (4) $P =$
 $\frac{60 + 85.7}{2} [(11 \times 10) + 15 (1.5708 + 1.5708)]$
 $P = 53870$ lbs.
With a centric load this pillar could
carry about 94,300 lbs. ($c = 600$ lbs./in.²).
This shows what an enormous difference
an eccentric load makes to the strength
of a pillar, even if the eccentricity is only
of the effective depth.

Case "B."

When the eccentricity of load, or the
equivalent eccentricity when there are
both axial and eccentric loads, is such that
tensile stresses are induced.
This method is explained in the follow-
ing manner: Suppose the eccentric load
to be carried on a cantilever, the com-
pressed area of the pillar being the fulcrum
and the tension rods on the tension side
forming the counterbalance, then to obtain
the moment of the eccentric
load (that is P times the distance of same
to centroid of the stress diagram of com-
pressed area) must be equal to the tensile
reinforcement (that is tA_t times the dis-
tance of same to centroid of the stress
diagram of the compressed area).
The total compressive force equals of
course the sum of P and tA_t .
Considering the above diagrams we
have that

$$\text{Total Compression } C = \frac{Px}{d - \left(\frac{bn^2}{6} - \frac{bn}{2} + mA_c \right)}$$

$$\text{Total Tension } = T = C - P.$$

$$\text{Total Resistance to Compression } = C = c \left(\frac{bn}{2} + mA_c \right)$$

$$\text{Total Resistance to Tension } = T = tA_t$$

Equating the values of C we get

$$\frac{Px}{d - \left(\frac{bn^2}{6} - \frac{bn}{2} + mA_c \right)} = c \left(\frac{bn}{2} + mA_c \right)$$

$$\frac{Px}{c} = \frac{bnd}{2} + mA_c d - \frac{bn^2}{6}$$

$$\frac{bn^2}{6} - \frac{bnd}{2} + \left(\frac{Px}{c} - mA_c d \right) = 0$$

and by substituting $r_c b d$ for A_c

$$\frac{bn^2}{6} - 3nd + 6 \left(\frac{Px}{bc} - mr_c d^2 \right) = 0$$
$$\frac{3d}{2} - \sqrt{\left(\frac{3d}{2} \right)^2 - 6 \left(\frac{Px}{bc} - mr_c d^2 \right)}$$

(6)

It should be noticed that the value of c
in this equation is the same value c that
is mentioned in Case A.

Should the value n be fixed, then
 $c = Px$

$$bn \left(\frac{d}{2} - \frac{n}{6} \right) + mA_c d \dots (7)$$

$$t = mc \left(\frac{d}{n} - 1 \right) \dots (8)$$

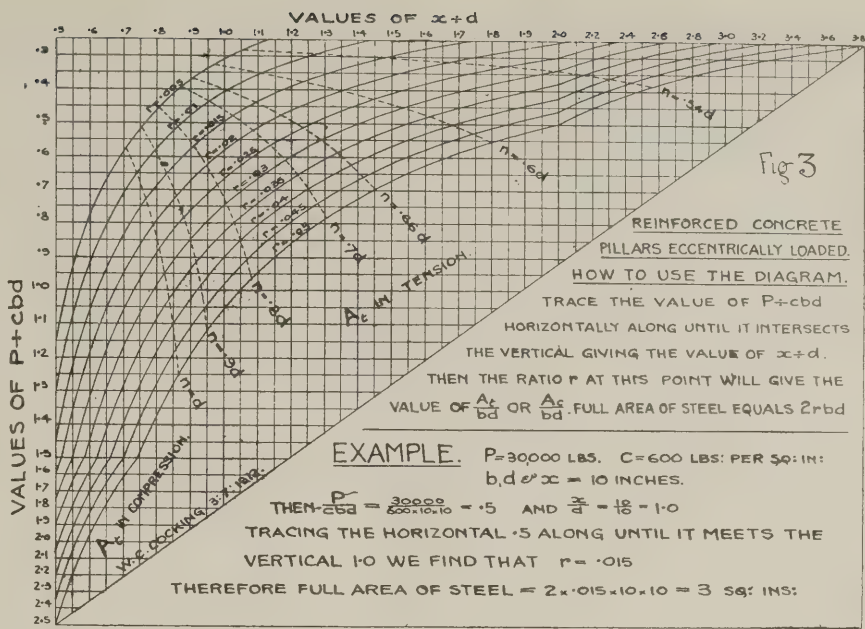
$$P = \frac{c}{x} \left(\frac{bnd}{2} + mA_c d - \frac{bn^2}{6} \right) \dots (9)$$

$$T = mcA_t \left(\frac{d}{n} - 1 \right) \dots (10)$$

$$C = c \left(\frac{bn}{2} + mA_c \right) \dots (11)$$

$$A_t = \frac{bn}{2} + mA_c - \frac{P}{c}$$
$$m \left(\frac{d}{n} - 1 \right) \dots (12)$$

The above formulæ apply when A_c is



fixed and c is the predetermined maximum
stress in compression.

In the case when A_c and A_t are both
fixed and c is a maximum (this is perhaps
the most common case in practice) we
proceed in the following manner:—

Now $C = P + T$.

$$\therefore c \left(\frac{bn}{2} + mA_c \right) = \frac{c}{x} \left(\frac{bnd}{2} + mA_c d - \frac{bn^2}{6} \right) + mcA_t \left(\frac{d}{n} - 1 \right)$$

from this $n^3 (b) + n^2 [3b (x-d)] + n$
 $[6mA_c (x-d) + 6mA_c x] - 6mA_c d x = 0$
and by substituting $r_c b d$ for A_c and $r_t b d$
for A_t we get $n^3 + n^2 [3(x-d)] + n$
 $[6mr_c d (x-d) + 6mr_c d x] - 6mr_c d^2 x = 0$ (13)
and when $A_t = A_c$ then $n^3 + n^2 [3(x-d)]$
 $+ n [6mrd (2x-d)] - 6mrd^2 x = 0$ (14).

The value of n can be accurately found
by plotting to a large scale the differences
obtained by substituting trial values of n
in equations (13) and (14).

Example.

We have a load of 25,000 lbs. to carry,
the load having an eccentricity $x - \frac{d}{2}$ of 7".

We propose to use a cross section having
 $d = 10"$, $b = 11"$, $c = 600$ lbs./in.² and
reinforced with four 1" dia. rods, one at
each corner.

Is this a satisfactory cross section?
By plotting formula (14) we find that
 $n = 6.1$ about. Then from formula (7) $c =$

$$\frac{25000 \times 12}{11 \times 6.1 \left(\frac{10}{2} - \frac{6.1}{6} \right) + (15 \times 1.5708 \times 10)} = 596 \text{ lbs./in.}^2.$$

The cross section is therefore quite
suitable.

Now suppose A_t was not given, but that
 A_c was 2 rods 1" dia., then from formula
(6) $n =$

$$15 - \sqrt{(15)^2 - 6 \left(\frac{25000 \times 12}{11 \times 100} - 15 \times \frac{1.5708}{11 \times 10} \times 10^2 \right)} = 6.01$$

A_t can be found from formula (12)

$$A_t = \frac{11 \times 6.01}{2} + 15 \times 1.5708 - \frac{25000}{600}$$

$$= 1.501 \text{ in.}^2.$$

When we have an axial load P_c and an

eccentric load P_e we reduce the sum of
these two loads to an equivalent eccentric
load P_e in the following manner and pro-
ceed as before.

Now $P_e = P_c + P_e$ and equivalent eccen-
tricity $= x_e = \frac{P_e \left(x - \frac{d}{2} \right) + \frac{d}{2} \dots (15)}$

Example.

If $P_c = 7,000$ lbs., $P_e = 9,000$ lbs., $x =$
9" and $d = 10"$

$P_e = 7,000 + 9,000 = 16,000$ lbs. from

$$(15) x_e = 9,000 \left(9 - \frac{10}{2} \right) + \frac{10}{2} = 7.25"$$

Having found P_e and x_e we proceed
exactly as in case A or case B (as the case
may be) by substituting P_e for P and x_e
for x in the various formulæ.

Fig. 3 gives the values of $\frac{P}{cbd}$ for various

values of r and $\frac{x}{d}$. From the vertical $\frac{x}{d}$
 $= .5$ to the intersecting line $n = d$ we
have the values for case A. A_t being in
compression. When n is less than d we
have the values for case B, A_t being in
tension.

This diagram only applies, of course,
when $A_c = A_t$.

Working Stresses.

We have mentioned in case A that the
value of c is obtained from the formula
 $W_e u [1 + f s r]$ as given in the proposed
L.C.C. regulations, items 99, 100 and 102,
but the writer would suggest that the
working stresses allowed for beams only
should be employed, because it is per-
fectly obvious that with helical hooping
or lateral binding satisfactory results can
only be obtained when the lateral com-
pressive stress or bursting stress on the
lateral reinforcement is constant all round
the pillar, which is only the case in a
centrically loaded pillar. This is a very
important point.

When more than four longitudinal rods
are employed, the above methods and
reasoning can be applied with certain
modifications of the various formulæ.

It is, of course, understood that these sug-
gestions have no pretension to finality.

REINFORCED CONCRETE
CYLINDRICAL CHIMNEYS.

A method of analyzing the stresses in cylindrical steel concrete chimneys was presented by Mr. I. Oesterblom in a recent paper before the American Society of Swedish Engineers. The various operations necessary in such an analysis are taken up by Mr. Oesterblom in the following order:

The first step is to determine the position of the neutral axis, which, in a reinforced concrete chimney, is located at the centre of gravity of the stress-resisting area. This area is made up of two zones, one a tension-zone, wherein the steel alone is active; the other a compression zone, where both the concrete and the steel act. In order that the neutral axis may pass through the centre of gravity of the section, the area moments of these two zones must be equal, and to formulate this condition he introduces the following symbols:

Let R = the radius of the chimney to the centre of the wall, which is also taken as the centre of the reinforcing bars;

t = the thickness of walls;

$p t$ = the thickness of the reinforcement considered as a shell of uniform thickness with the Radius R ;

P = the ratio of reinforcement to total wall area;

$q R$ = the distance from the centre of the chimney to the neutral axis;

$n = E_s / E_c$ = the ratio of the moduli of elasticity of steel and concrete.

From these, if M_t equals the area moment of the tension zone and M_c that of the compression zone, we have, from the required condition that M_t shall equal M_c , the following expression involving p , q and n expressed in terms of p .

$$p = [\sqrt{1 - q^2}] - q \arccos q \\ \div [\sqrt{(1 - q^2)} + (n - 1) q \arccos q.]$$

Since n is known, the relation between p and q may be expressed graphically for the numerical calculation of $q R$.

In order to determine the internal shear we must know the total area moment, which equals $M_t + M_c$. Omitting the calculations involved in determining these values the total area moment may be expressed as $M = C_m R^2 t$ where

$$C_m = 2 \{ [1 + (2n - 1) p] \\ \times \sqrt{(1 - q^2)} - (1 - p) q \arccos q \}$$

As in the previous case the value of C_m depends upon the value assigned to p .

The moment of inertia of the section is determined by combining the respective moments of inertia of the tension and compression zones. Its value may be expressed in the form $I = C_1 R^3 t$ where C_1 is a function dependent upon p alone and equals

$$C_1 = [1 + (2n - 1) p] \\ [1 + 2 q^2] \arccos q - 3 q (1 - p) \sqrt{(1 - q^2)}.$$

This value may be determined graphically for purposes of calculation.

There are three section moduli to be considered, one for tension in the steel and one each for compression in the concrete and the steel. As the fibre distance equals $R + q R$ for tension and $R - q R$ for compression, these moduli become,

for tension in the steel, $S_{ts} = C_{ts} R^2 t$, where $C_{ts} = C_1 / n (1 + q)$; for compression in the steel $S_{cs} = C_{cs} R^2 t$ where $C_{cs} = C_1 / n (1 - q)$; and for compression in the concrete $S_{cc} = C_{cc} R^2 t$ where $C_{cc} = C_1 / (1 - q)$. The three variables involved are all dependent upon p and may be evaluated as in the previous cases.

With the section moduli known the longitudinal bending stresses may be expressed in terms of them and the wind moment M_b as follows: For tension in steel $\sigma_{ts} = M_b / S_{ts}$, for compression in steel $\sigma_{cs} = M_b / S_{cs}$, and for compression in concrete $\sigma_{cc} = M_b / S_{cc}$. From the discussion of section moduli we get the relation $\sigma_{ts} / \sigma_{cc} = C_{cc} / C_{ts}$, or the longitudinal bending stresses are inversely proportional to the corresponding section modulus constants. A further relation is given by the expression $n (1 + q) / (1 - q) = \sigma_{ts} / \sigma_{cc}$, which solved for q gives $q = (\sigma_{ts} - n \sigma_{cc}) / (\sigma_{ts} + n \sigma_{cc})$. From this expression we can predetermine the values of q , and hence of p , having the allowable bending stresses of the steel and the concrete.

In determining the shearing stresses due to bending, the maximum longitudinal shearing stress in the interior of the chimney walls may be found from the formula, $\tau = V M / 4 I$, in which τ = the internal shear per unit of length; V = the intensity of the shear and M = the total external shear at any elevation. This general formula may be expressed as $\tau = C_s V / R$ where $C_s = C_m / 4 C I$, and is a variable dependent upon factors previously determined. Assuming the same ratio between the moduli for shear as previously assumed between moduli for longitudinal stress, we have the shear intensity for concrete.

$$\tau_c = C_s V / [1 + (n - 1) p_s] R t;$$

and for steel

$$\tau_s = n C_s V / [1 + (n - 1) p_s] R t$$

when p_s = the ratio of transverse reinforcement.

For any given value of τ_c , with an estimated value for V and a given or predetermined horizontal section,

$$p_s = (C_s V - \tau_c R t) / (n - 1) \tau_c R t.$$

This expression gives a minimum rate of transverse reinforcement for a maximum allowable value of τ_c . It should be noted that, this shear being a function of longitudinal stress, increment cannot be determined from the formula for shear as deduced for cylindrical beams. A practical value for $C_s = 0.35$ and for p_s is given by the expression

$$p_s = (1.53 h - \tau_c t) / 14 \tau_c t$$

where h = the height of the chimney in feet. If $p_s = 0$ and the maximum value for τ_c is taken at 30 lb. per square inch, then the maximum permissible value for h without transverse reinforcement is given by the expression $h = 19.6 t$. The author states that the value of τ_c should be kept low on account of the pendulum action of the chimney shaft with a heavy wind blowing.

The stresses due to weight alone are distributed between the steel and the concrete in proportion to their respective moduli of elasticity. That in the concrete $s_{cc} = C_{wc} h$ where

$$C_{wc} = w / 144 (1 + (n - 1) p),$$

and the stress in the steel $s_{cs} = C_{ws} h$ where

$$C_{ws} = n w / 144 (1 + (n - 1) p).$$

In these expressions w = the weight per cubic foot of composite material and h = the height of the chimney in feet.

Values for C_{wc} and C_{ws} may be calculated once for all for various values of p and

The author states that the previous analysis applies strictly to the determination of stresses in existing structures, but with slight transposition in the formula may be utilized for purposes of design. The necessity of providing for temperature and shrinkage stresses is always present. The required provision may be estimated if the respective coefficients of contraction are known. Other stresses present are due to local bending, the flattening effect on the shaft due to wind and the inertia of the structure. The last mentioned is probably incalculable and yet may prove to be serious under certain conditions. Local stress caused by diagonal tension or compression will occur, the author states, if reinforcing bars are lapped instead of being spliced. He recommends the use of a direct mechanical splice for all reinforcement placed in a chimney. In summing up Mr. Oesterblom admits that the theory given is somewhat of an approximation and states that it is not applicable to the analysis of small shafts with heavy wall

DETAILS OLD AND NEW.—XLVI

Tombs from Fairford Churchyard.

An interesting chapter in the history of architecture remains to be written of tombstones. Their design follows so intimately the fashions of the Mistress Art as occasionally to throw sidelights on Professor Blomfield, indeed, makes the advent of Torrigiano and his work on the tomb of Henry VII. the beginning of Renaissance architecture in England. With such a beginning it follows that many fine memorials must needs be built, as indeed there were, and no branch of architecture has had greater thought and genius spent on it. To mention but the name of Nicholas Strong is to conjure up the remembrance of many fair monuments, whose beautiful effigies, whose carving, richly dight with bright heraldic colouring and gilding, is a perpetual source of delight. Later, Roubilliac, and lastly, Alfred Stevens, have given of their best to the kind of architecture.

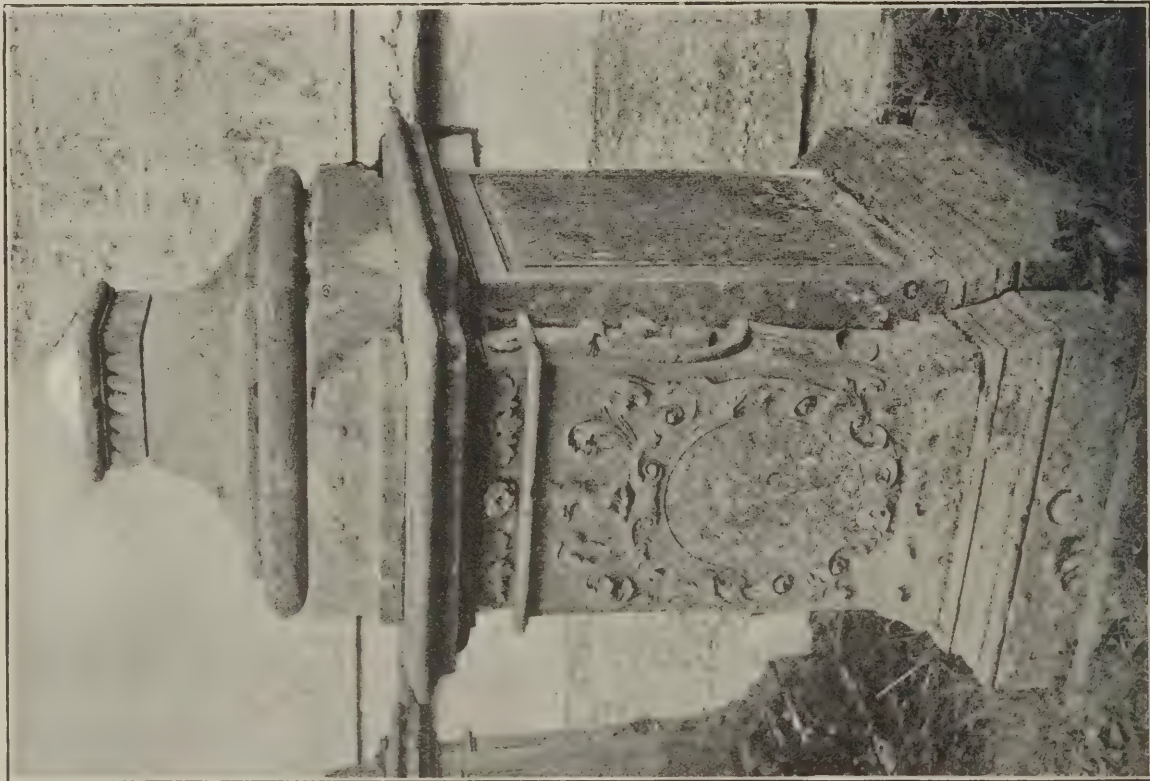
What shall we say of the anonymous carvers and masons who have, up and down England, filled the churchyards with their handiwork? Quiet, unobtrusive like all work of which the author gives but a name, these tombstones lie, in the shadow of how many village churches—the shade of yews or half-buried armorial grass and flowers, they still tell, in the half-obliterated tablets, the humble virtue of the dead.

There are many types among the headstones, from the simple slab to the rich carved one. The lettering is invariably beautiful. An almost equal variety may be found among the more elaborate sarcophagus tombs. The two illustrated, from Fairford Churchyard, are of the less usual sort. They are both extremely interesting from their general design, and the fine profiles of the mouldings and carving.

How was it this tradition died out? Consider the taste with which the herald has been carved! It is not quite Art, but it is adequate and suitable. Can we see as much of modern work? But perhaps no branch of modern work has been so much degraded as that which is undertaken by so-called "monumental masons," who make the modern cemetery, with its ghost-like rows of marble tombs, artistically abhorrent.

J. M. W. H.

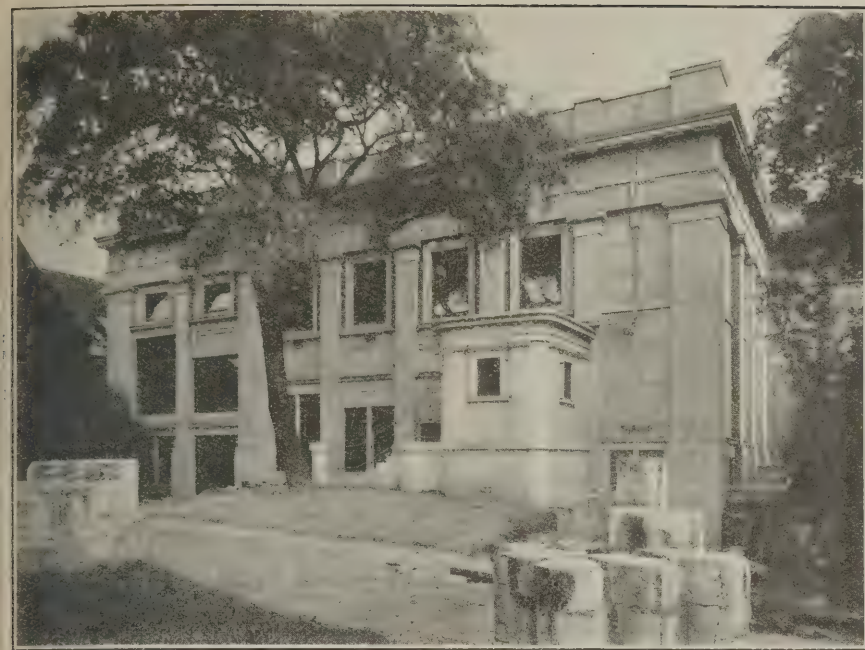
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TOMBS IN FAIRFORD CHURCHYARD.



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NEW LECTURE THEATRE, YORK MUSEUM. E. RIDSDALE TATE, ARCHITECT.

This addition to the York Museum is constructed of reinforced concrete, all moulded in situ.

NEW LECTURE THEATRE, YORK.

The new lecture theatre which has been added to the Yorkshire Philosophical Society's Museum, York, is at the west end of the old building. The theatre is about 79 ft. long and 47 ft. wide, seating nearly 400 people.

The interior of the theatre has been decorated in the Grecian Ionic style. Lofty pillars with handsome capitals are arranged along the face of the walls about 12 ft. apart, and support the main beams of the roof and ceiling. The lower part of the walls, to a height of 10 ft., is covered with oak parquetry, behind which, as a precaution against both fire and damp, is inserted asbestos sheeting; and the doors are similarly treated. The ceiling is divided into large panels with deep moulded and panelled beams.

The warming of the theatre, lower hall, and workroom is by low-pressure hot water, large radiators being placed at convenient points along the walls, with inlets for fresh air behind them, the foul air being discharged by means of extraction shafts and roof ventilators.

Mr. E. Ridsdale Tate, of York, is the architect; and the reinforced-concrete work was executed by the Trussed Concrete Steel Co., Ltd., Westminster.

The museum, to which the theatre has been added, was built in 1830, and occupies one of the finest and most historic sites in York, on the crest of the hill between the King's Manor and the river, with the old Roman wall and the Multangular Tower and St. Leonard's Hospital on one side, and the ruins of St. Mary's Abbey on the other. It contains an unrivalled collection of Roman antiquities. More than fifty inscriptions, funereal and votive, are reserved, while more than forty huge stone cists are in the grounds, with examples of almost every kind of interment in use among the Romans. Nearly 700 urns of all forms are shown in the museum, besides many other relics of the Roman occupation. A large collection of sculptured fragments has been carefully arranged, affording the architectural student ample opportunities of study.

TENSILE STRESSES IN STEEL ANGLES.

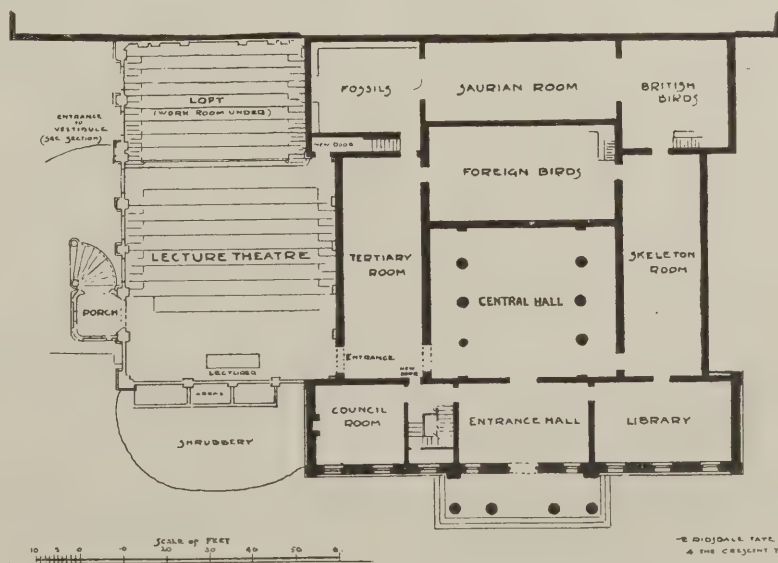
The day is long since passed when it was thought sufficient to multiply the total cross-sectional area of a steel angle by the breaking stress of steel per square inch to obtain the ultimate strength of the angle, but the exact determination of the distribution of tensile stresses in an unsymmetrical section when acted upon by an eccentric axial pull has not yet received the attention which its importance demands. A paper, therefore, like that recently presented by Mr. C. Batho to the Canadian Society of Civil Engineers is of considerable importance, for it not only gives the correct theory of stress distribution in a tensile specimen, but it shows that by careful measurements on the specimen under stress the formulæ for the general case of bending can be verified.

In structural design there are so many cases where a member, such as an ordinary horizontal beam supported at both

ends, is subjected to simple bending by vertical loads, that the general case of bending is not generally understood. The simple beam just cited is really only one special case of the general problem of flexure, because the cross-section of the beam is ordinarily symmetrical and its vertical axis of symmetry coincides with the plane in which the loads act. This vertical axis being an axis of symmetry is one of the principal axes, and hence the neutral axis is horizontal and passes through the centre of gravity of the cross-section.

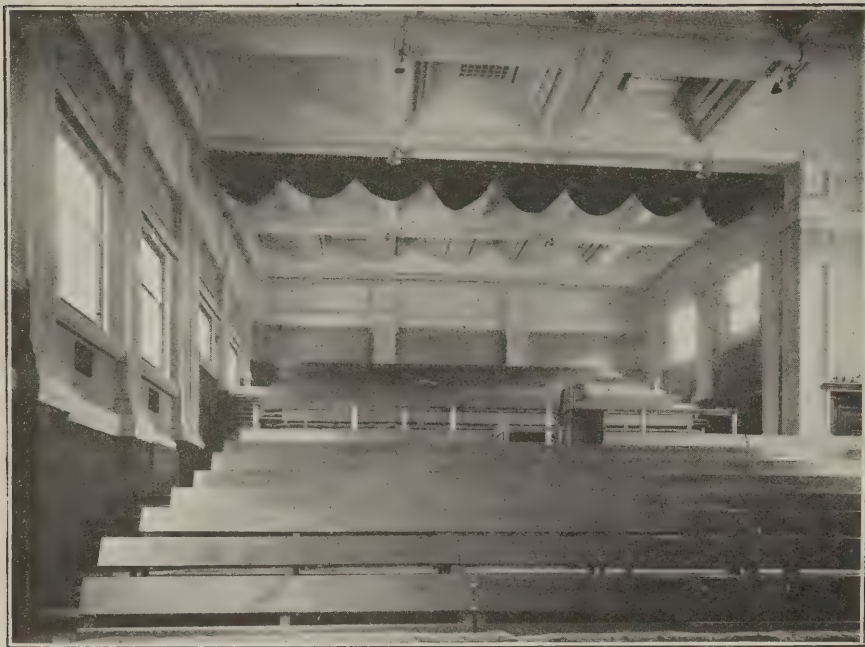
Instead of a simple case of flexure like this, consider a steel angle subjected to an eccentric pull transferred into the specimen through a connecting plate at each end. This is a combined case of tension and bending, and, furthermore, the bending due to eccentricity is not the simple case of the beam, but is complicated by the fact that the neutral axis about which bending takes place must be located before the fibre stresses can be determined. The solution of this general case of bending has long been known, but for some reason or other has not found its way into the textbooks on strength of materials to any extent. As a result, one finds the general case of flexure not widely used, especially among the younger men engaged in structural engineering. The clearest presentation of the theory involved is that given by Professor L. J. Johnson in volume 56 of the "Transactions" of the American Society of Civil Engineers, and Mr. Batho uses this method in his paper.

Mr. Batho has made some tension tests on $3 \times 3 \times \frac{1}{4}$ -in. angles, and has measured with unusual accuracy the elongation of fibres at many points on the surface of the specimens, and from these deformations determines the fibre stresses. These observed stresses are then compared with fibre stresses computed by means of the general formula for combined tension and bending, and some very careful work is indicated by the manner in which plotted points fall on the curves representing observed deformations of different parts of the specimens. The conclusion reached by the author of the paper is that the experiments on tension specimens of uniform cross-section subjected to eccentric axial loads not in an axis of symmetry of the cross-section bear out the general theory for this case. It is further shown that the connecting plates offer very little



NEW LECTURE THEATRE, YORK MUSEUM.

In this ground plan, the old building is indicated by black lines.



On the extreme right is seen a portion of a door for late arrivals, and for exit.
NEW LECTURE THEATRE, YORK MUSEUM: LOOKING TOWARDS BACK
OF AUDITORIUM.

resistance to bending, so that an angle in tension riveted to gusset plates is in reality a member with free, not fixed, ends. In the derivation of the general formula for flexure, the assumption is made that the intensity of stress varies directly as the distance from the neutral axis. The experiments recorded in the paper under consideration show that this assumption of linear distribution of stress is substantiated.

So many tests have been made with crude or inaccurate measuring devices that it is gratifying to observe how much emphasis Mr. Batho has placed on refined methods of measurement. In dealing with small deformations under low stresses an error of 0.0001 in. might be a very appreciable one, and yet many extensometers read directly only to a thousandth of an inch, and are estimated to ten thousandths. In determining the elongations in these angle tests the Martens extensometer was used. This instrument admits of very accurate work in tests where there is no vibration, but where the extensometer is subjected to motion it is a poor instrument to use, because observations on the mirror are then rendered difficult.

The paper to which reference has been made not only gives the formulæ for the general case of flexure but makes very clear the influence eccentricity in a tension specimen has on the maximum fibre stress. For example, in a $3 \times 3 \times \frac{1}{4}$ -in. angle in tension the maximum fibre stress below the elastic limit computed from the general formula is 2.29 times the mean stress. In the results of tests on angles published in 1906, it appears that a $3\frac{1}{2} \times 3 \times \frac{3}{8}$ -in. angle had an average unit tensile breaking load of only 47,400 lb. per square inch at fracture for material which had an ultimate tensile strength of 59,300 lb. per square inch as determined by tests on standard tension specimens subjected to a direct pull.

In our own country, tests of similar character to Mr. Batho's have been hitherto mainly conducted privately; but we may hope for more prolificacy and regularity now that the technical schools and some of the universities are being equipped for experiments.

NEW STEEL SHAPES.

The American standard I-beam sections which were adopted a little more than six years ago by the Association of American Steel Manufacturers have proved so satisfactory for most purposes that little criticism of them is heard now except for certain uses in steel frame buildings, where it is frequently desirable to employ deeper beams than are required by considerations of safe carrying capacity. In order to obtain the requisite stiffness or to provide for certain types of floor construction it has been necessary to use heavier beams than the requirements for strength alone called for. The Carnegie Steel Company began a series of investigations some time ago to ascertain just how it could modify the standard sections to meet these special architectural requirements. Numerous



This is the old lecture theatre with the well covered over. The new gallery is in bay-wood, and the floors are of reinforced concrete.

GENERAL OR RECEPTION HALL.

tests of standard and special shapes were made, and a number of new sections have been evolved as a result of the experience gained in this way. A complete list of them, with all the tables needed by designing engineers wishing to use them, has been issued by the Carnegie Steel Company. The new sections range from 27 in. in depth down to 8 in., and their main novelty in comparison with the older standard sections seems to be in the use of a little more metal where the web and flange join, the point where recent investigation have shown the I-beam to be most likely to be deficient in strength.

The modification of standard sections in accordance with careful observation of practical requirements is no doubt a legitimate advance along the lines of progress but the mere multiplication of shape would be of very doubtful advantage.



The curtain is to divide the gallery from the body of the theatre.

NEW LECTURE THEATRE, YORK MUSEUM: LOOKING TOWARDS LANTERN SCREEN.

O. 30a, WIMPOLE STREET, AND
O. 32, NEW CAVENDISH STREET, W.

The rebuilding of the above premises for Dr. Irwin Moore, carried out to the designs and under the supervision of Messrs. Banister Fletcher and Sons, architects, 29, New Bridge Street, London, E.C., afford a good example of the application of Expanded Steel-Concrete for interior construction.

The building, which consists of two houses divided by a party wall, occupies a prominent position at the north-east corner of the junction of the two streets, there being a frontage of about 23 ft. in Wimpole Street and about 90 ft. in New Cavendish Street.

A brief summary of the work is here given. There are five suspended floors (ground floor to fourth floor) to each house. The roof, which is partly flat and partly sloping, runs into a gable wall at the Wimpole Street front, and contains several dormer windows on the Cavendish Street front.

The floors and roof are constructed of concrete 5 in. thick, except the sloping portions of the roof, which are $4\frac{1}{2}$ in. thick, reinforced with Expanded Steel throughout the underside, and at the top side over intermediate supports.

The beams under the floors are generally placed to come over the light partitions separating the rooms and corridors. These beams are 9 in. deep and $4\frac{1}{2}$ in. wide. An exception is the beam at each floor in the centre of the front room facing Wimpole Street, this being 5 in. deep under the bay and 10 in. wide.

The staircase in the Wimpole Street House is contained partly by two chimney stacks and partly by concrete walls $4\frac{1}{2}$ in. thick, reinforced with Expanded Steel. The steps and landings are monolithic. The steps have a minimum thickness of 1 in. under the oak treads, and the landings are 5 in. thick. Rib Mesh Expanded Steel is used as reinforcement, the longitudinal ribs spanning from side wall to side wall and from back wall to front wall. These stairs are constructed with rectangular lift well in the centre.

The staircase in the New Cavendish Street House is of similar construction, with the exception that it is contained on three sides by Expanded Steel-Concrete walls $4\frac{1}{2}$ in. thick, and on the remaining side by the party wall of the adjoining building in Wimpole Street. The lift enclosure in this instance adjoins the staircase against the party wall, and its walls are of concrete $4\frac{1}{2}$ in. thick, reinforced with Expanded Steel.

The floor plans are generally similar to each other, the height from floor to floor varying from about 11 ft. to 9 ft. in the rear. Lavatories adjoin the staircases in both houses between the floor-levels.

At the fourth floor-level in the Wimpole Street House there is a belvedere facing New Cavendish Street; this, with a 9 in. thick wall running at right angles to it, is carried by reinforced concrete beams which are formed above instead of below the floor slab, in order to leave a flush ceiling to the rooms below.

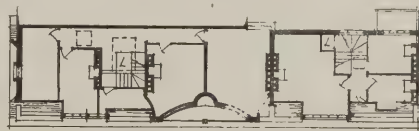
The roof is specially designed so that a maximum wind-pressure on its sloping surface will not cause any thrust on the party wall of the adjoining Wimpole Street building.

The beams in the floors and roofs are reinforced with mild steel bars, and where these are insufficient to take the shearing stresses, the beams are further reinforced with Rib Mesh Expanded Steel, the ribs being bent to form U-shaped stirrups

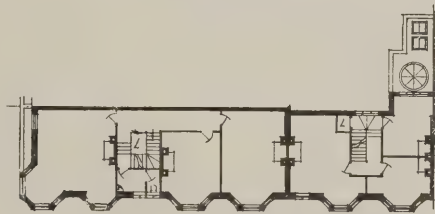


No. 30a, WIMPOLE STREET, AND No. 32, NEW CAVENDISH STREET, W.
BANISTER FLETCHER AND SONS, ARCHITECTS.

round the tension bars and to extend well up into the compression areas. Round mild steel bars are also used in those parts



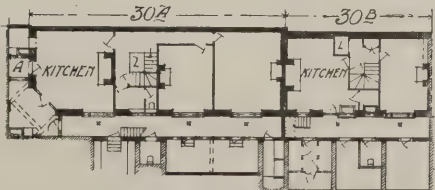
FOURTH FLOOR PLAN



1ST, 2ND & 3RD FLOOR PLAN



GROUND FLOOR PLAN.



BASEMENT PLAN.

of staircase walls which were constructed to act as beams.

One of the objects kept in view in designing the interior of the building was to make the utmost use of all the available space, and the way in which Expanded Steel-Concrete has adapted itself to the requirements is shown in the following details: The overall thickness of the finished floors, including $1\frac{1}{4}$ in. wood block floors and 1 in. plaster on the ceilings, is 7 in. The overall thickness of the staircase walls, including 1 in. of plaster on either side, is $6\frac{1}{2}$ in.

As most of the beams are constructed over partitions, there is practically no obstruction between walls to light and air. The staircase would have been very much heavier in stonework, in which material it would have been difficult to obtain sufficient headroom for some of the lift entrances.

The only structural steelwork used in the building consists of a few solid steel columns, which support the R.S.J.'s carrying the bay windows along the New Cavendish Street front, and which are encased in Expanded Metal lathing and plaster; and two R.S.J. beams, supporting brickwork over openings, which are encased in No. 6 $1\frac{1}{2}$ -in. Diamond Mesh Expanded Steel and concrete.

All the lintels are made of reinforced concrete.

The ground floor of the building is about 2 ft. above street level, and along the frontage is an area to the depth of the basement floor. Under the pavement are a series of vaults, which in general have been left intact during reconstruction, but where alterations were required a slab of Expanded Steel-Concrete $5\frac{1}{2}$ in. thick was substituted for the heavy arches.

The whole of the work was carried out by the general contractor, Mr. A. Monk, Lower Edmonton, London; the reinforced-concrete work having been done by the

Expanded Metal Co., Ltd., of London and West Hartlepool, from whom the whole of the reinforcement was purchased.

The following is a list of some of the contractors, in addition to the Expanded Metal Co., Ltd., of York Street, S.W.: General contractor, Albert Monk, Joinery Works, Lower Edmonton; steel casements, Geo. Wragge, Wardry Works, Salford; electric lifts, W. J. Furze, Traffic Street, Nottingham; tiling, Shark Grip Tiling Co.; slating, Roberts, Adlard and Co., Bermondsey Wall; wood-block flooring, Excellence Wood Block Flooring Co., Prospect Saw Mills, Leeds; sanitary fittings, O'Brien, Thomas and Co., 17, Upper Thames Street; marble, Art Pavements and Decorations, Ltd.; ranges, Smith and Wellstood, Bonnybridge; gates, Bainbridge Reynolds, Old Town, Clapham.

NEWS ITEMS.

Some Remarkable Bridges.

The longest span for a masonry bridge is said to be 295 ft., while in the great Williamsberg suspension bridge, over the East River, New York, the span of 1,600 ft. is attained, and in the great bridge over the St. Lawrence at Quebec a span of 1,800 ft. is proposed. The bridge over the Forth is generally regarded as being probably the highest expression of engineering skill.

A Relic of Old St. Paul's.

Excavations on the site of some old houses at the corner of Paternoster Row and Paul's Alley, London, E.C., built after the Great Fire of London, have brought to light an old wall about 60 ft. long. This wall, which is made of chalk and rubble, belongs to the twelfth century, and is part of the wall which once enclosed old St. Paul's. Fragments of a Roman amphora, of Samian ware, and pieces of Roman vases, have also been unearthed.

Discovery of Greenstone in New Zealand.

A mountain of New Zealand greenstone has been discovered in the Griffin Range, Taratama, and a company has been floated in Sydney to work the greenstone mine. Greenstone is a semi-precious stone found only in New Zealand, in very varying qualities. As greenstone is in great demand for inside and outside decorations, the new find will enable the stone to take the place of marble, for architects have long sought for such a coloured stone with markings. It is reckoned that the amount available in the new mountain is nearly 300,000 tons.

Shoreditch Parish Church.

Shoreditch Parish Church, a fine Georgian building, finished in 1740 from the plans of George Dance (the elder), is now undergoing restoration. It is the third on the same site where a Christian church has stood continually for more than 1,000 years. The east window, pronounced by experts to be a "priceless treasure" of Flemish glass, dating from 1634, has recently been renovated at a cost of £110. More than £140 worth of work has been required on the roof, in order to keep out the rain and preserve the internal decoration of the ceiling. The 1757 organ needs an expenditure of £550 to put it in proper order.

Selby Abbey South Transept.

It had been hoped to have Selby Abbey south transept ready for dedication on August 1st next, but it appears that the work could not be finished in time, and that the opening ceremony must therefore be postponed until September, to a date to be fixed. Delay has arisen, it appears, owing to the need for extreme care in dealing with the masonry. Excellent progress has been made with the general scheme, and Mr. J. Oldrid Scott, the architect, speaks highly of the admirable way in which the contractors are carrying out his designs. The style is of the Decorated period, in harmony with the beautiful fourteenth century choir, and the transept will, of course, supply the omission that has disfigured the exterior for over two hundred years. Although at present the newness of the stonework contrasts strongly with the rest of the fabric of the church, there is good reason to believe that it will grow mellow with the weather in a comparatively short space of time, just as the new tower has already done. It is hoped before the end of the present month to have the stained glass of the great window in position. This, like the transept, is the gift of Mr. William Liversidge, and will illustrate events in the history of Selby Abbey. The corresponding Perpendicular window in the north transept is to be filled with scenes connected with the Abbey's patron saint, Germanus, and an effort will be made to obtain the faculty for it, and get the work completed ready for the south transept dedication ceremony in September. This latter window, which will cost £800, is the gift of Miss Standerling, who endowed the women's ward of Selby Cottage Hospital, and is intended as a memorial to her parents.

BREVITIES.

It has been decided to erect a permanent memorial at Ladysmith to Sir George White and Sir Redvers Buller.

Plans prepared by Mr. C. Spooner, F.R.I.B.A., for the erection of the proposed new church of St. Gabriel, Aldersbrook, for a new parish to be carved out of Little Ilford and Wanstead, have been approved.

Messrs. Carter and Co., Ltd., the well-known tile manufacturers of Poole, recently called a meeting of their employees regarding the Insurance Act, when Mr. Charles Carter, who presided, informed the employees that it was the intention of the directors to pay the employees' contribution as well as the employers'.

Four buildings, with accommodation for workmen and their families, have been erected by M. Charles Stern in the Vincennes district of Paris, and in order to cope with the depopulation problem M. Stern has decided that if a child is born into a tenant's household the family need not pay any rent for the ensuing quarter.

An exhibition of work done by students in the architectural department of University College (University of London) during the past session is being held in the Science Library, University College, from Saturday, July 13th, to Saturday, July 20th, both days inclusive. The exhibition is open to the public from 9 a.m. to 6 p.m.

A new railway station, bridge, and sidings are being constructed at the Letcworth Garden City at a cost of £24,000.

An interesting event took place on July 9, when Mr. R. A. Briggs entertained at dinner Mr. Herbert Batsford, Mr. Harry Batsford, Mr. Harry Brown (Mr. Briggs's partner), and several of the oldest members of Mr. Batsford's staff, to celebrate the twenty-first anniversary of the publication of his "Bungalows and Country Residences."

The imitation stone "Ferrocen" from and fibrous plaster and decorative work for the new Grand Theatre, Penton Rhondda Valley (Messrs. Willis and Cromie, architects); also the whole of the fibrous plaster and decorative work for the new Hippodrome, Aldershot (Mr. Bertie Crewe, architect), has been placed with Messrs. John Tanner and Son, Horseferry Road, Westminster.

BRISTOL SOCIETY OF ARCHITECTS.

Excursion to Malmesbury and District.

The annual excursion of the Bristol Society of Architects took place on July 2nd to Malmesbury, Cirencester, and neighbourhood. After the party had left Bristol, the first stop was at Cold Ashton, where, by permission of Mr. A. T. Crewe, the Manor House was viewed. At Malmesbury the members were received at the Abbey by the Rev. Charles D. McMillan, M.A., and under the guidance of Mr. Harold Brakspear, F.S.A., A.R.I.B.A., the building and the Abbey House were inspected. Continuing the journey to Cirencester, the party lunch at the King's Head Hotel. At the conclusion, the president, Mr. J. Foster Wood, F.R.I.B.A., referred to the honour recently bestowed by His Majesty King George V. upon a member of the society and a letter of congratulation and expression of the valuable services rendered and the interest taken in the society during many years, formerly as president and later as member of the council, was signed by the members present and dispatched to Sir Frank W. Wills.

The party then viewed the parish church, where they were received by the vicar, the Rev. W. A. Robins, M.A., and under the guidance of Mr. E. C. Sewell (local hon. secretary of the Bristol and Gloucestershire Archaeological Society) this interesting building was inspected. By permission of Captain J. Gordon Dingle, D.S.O., the members walked through the Abbey grounds to inspect the Roman capital and ancient gateway, the only remains of the Abbey. Thence they walked by St. John's (The Pæn) Hospital and Thomas's Hospital to the Corinium Museum of Roman Antiquities. Sewell, who accompanied the members, read interesting notes, and gave valuable information.

At Minchinhampton a stop was made to see the church, and the Rev. J. F. Lewis read some notes on the building; the principal feature of interest being the south transept with its stone roof. From Minchinhampton the route was through Nailsworth to Uley. The intention was to visit the Tumulus and walk to the G. Camp at Uley Bury, but as the weather would not permit of this being accomplished the journey was continued to the Open Old Manor. By the kindness of Mr. Trent-Stoughton tea was offered, at which the delightful old house and grounds and the church—recently restored by Mr. Trent-Houghton—were inspected.

THE ARCHITECTS' & BUILDERS' JOURNAL.

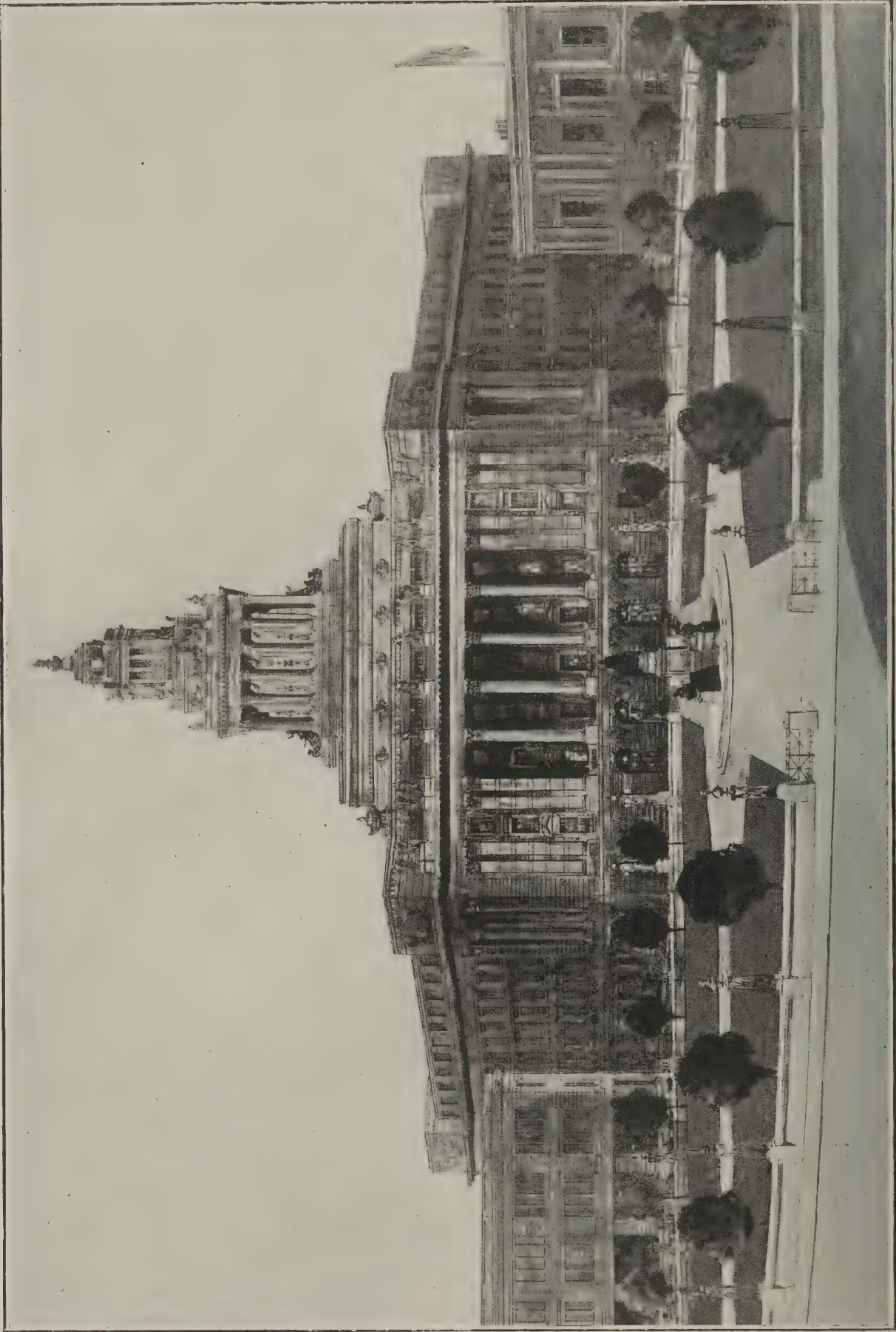
WEDNESDAY,
JULY 24th, 1912.

Volume XXXVI.

No. 914.



MR. T. EDWIN COOPER, F.R.I.B.A.,
whose accepted designs for the new head offices for the Port of London
Authority are shown on pp. 80, 82, 98, and 99.



NEW HEAD OFFICES FOR THE PORT OF LONDON AUTHORITY. SELECTED DESIGN: PERSPECTIVE VIEW. T. EDWIN COOPER, F.R.I.B.A., ARCHITECT.

(For further illustrations see pp. 79, 82, 83, and 84.)

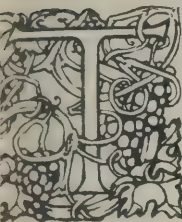
THE ARCHITECTS' & BUILDERS' JOURNAL.

JULY 24th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 914.

The Port of London Designs.

HE six designs submitted in the second and final competition for the head offices for the Port of London Authority have been exhibited at the riverside offices on the Victoria Embankment; that is to say, they have been put in a room where people can go and look at them, but with no proper grouping, no names of competitors given, and some drawings important to the understanding of a design not to be seen at all; of one design, for instance, no sections were to be made, though they must have been on the premises somewhere. Not only were the names of the respective architects not appended to the designs, but there was no one on the premises who could give any information whatever about them. We got accidentally information as to the authorship of four of the designs, from one of the competitors; for the other two, we can only draw conclusions. Nothing could have been arranged in a more unbusiness-like manner.

The six designs selected as the best art of the sketch competition proved to be by Messrs. R. Atkinson, Bowden and Wallis, T. Edwin Cooper, Lanchester and Eckards, J. R. T. Truelove, and E. W. Wray. These architects were therefore invited to submit finished drawings in the final competition, which has been decided in favour of Mr. Cooper. The Port Authority reserved the right, after the Sketch Competition, to invite six other architects who had not taken part in the Sketch Competition to compete in the final one; a right which we are glad to say they did not exercise, and which they never ought to have claimed. This method of procedure was first adopted in the London County Hall competition, and ought never to have been regarded as a precedent. It is most unfair to those who enter into the sketch competition to call in outsiders afterwards, on the plea that the results of the first competition were not good enough. If they are not going to abide by the results of the competition, why have one at all? Why not select the six or twelve outsiders at once, and let them compete? It is a matter which the competitions committee of the Institute ought to take up, and pronounce an opinion on it, or we shall have this practice cropping up again and again in large competitions.

The problem put before the competitors, in respect of plan, was an unusual one, and seemed to promise an unusual architectural opportunity. Instead of an ordinary block of offices, they were told the main idea for the ground floor was "the provision of a fine Hall, in which the Departments scheduled can be accommodated, glazed enclosures being provided generally for the various chiefs. This apartment to have good architectural character, and to be arranged for easy supervision and accessibility for the public." This is rather a vague description, capable of various interpretations; but it is obvious, at all events, that one object of the promoters

was to secure a fine architectural effect internally, by having a great hall out of which the various departments should open, instead of mere corridors and office doors. Another point to be noted in regard to the site is that in front of the existing Trinity House is Trinity House Square, with its elliptically planned garden, axial apparently with the main wing of the Trinity House; and if the new building is to be parallel with Trinity House cannot be axial with Trinity Square. This is one of the smaller problems connected with the site, which have been solved in different ways on the plans submitted.

Mr. Cooper's plan meets this point best; he provides a generally square block, but with the south-eastern portion canted off at an angle, which canted portion he makes the principal façade, axial with the centre-point of Trinity Square. The buildings form a large quadrangle with one angle canted off, the large hall being a circular apartment in the centre of the quadrangle, covered with a low glazed dome on coffered coives, so that above this, on the upper storeys, there is a very large centre space inside the quadrangle, and no small and confined court yards. There are staircases and interior approaches to the central hall from three angles, and from the main entrance facing Trinity Square. We do not quite understand, from the large-scale ground-plan (which was hung rather high), in what way the author intends to use the central hall; it is apparently occupied with curved concentric desks, and not as a space for the public. The architect has got all his rooms on the upper floors lighted with outside light, *i.e.*, not into narrow light-areas; but his long corridors between two sets of offices can only be lighted by borrowed light through the office doors or partitions—and apparently they will be dark even then. The efficient lighting of corridors as well as of rooms is especially mentioned in the Instructions. Architecturally, the main impression produced and evidently aimed at is a monumental massiveness. An order of columns, through three storeys, is introduced on the façade towards Trinity Square, between heavy angle pavilions; there is an immense mass of masonry above the balustrade, supporting a colonnaded storey carrying a lantern or cupola. The effect of the whole is certainly monumental, but rather ponderous. The board-room on the second floor (according to the instructions) is placed on the Trinity Square frontage, the proper place for dignity, though perhaps not for quiet. The angle pavilions, very important architecturally, are on plan almost entirely occupied by lavatories, which seems rather unsuitable. Lavatories should occupy a less prominent portion of the architectural design.

Going round the room from Mr. Cooper's drawings, we next come on those of Messrs. Bowden and Wallace. Theirs is a parallelogram plan, parallel with Trinity House, and the central axis of the plan would be about a tangent to the curve of Trinity Square garden, so that there is no relation between the building and the ground in front of it. The central hall is a very fine apartment in three bays, each lighted by a glazed dome; offices and counters to right and left of it, and service staircases and lifts are cleverly worked into the piers. The detail of the

Hall is neo-Greek of a very French character, shown in a very able perspective drawing. All the offices have outside lighting (we mean not lighted from courtyards) except some of the engineer's offices on the fourth floor, but these look on to a courtyard 50 feet wide. The engineer's drawing-office on the north side is stated to have "top-light." Provided it is a north light, we doubt if top light is as good as ordinary window light. The façade is decorated with a Roman Doric colonnade, and above the blocking a central steeple with an open colonnaded storey; over that the kind of sarcophagus feature which seems almost *de rigueur* now on a new building, and above that a stepped podium carrying a large ship model. The exterior details are rather coarse, but the internal hall is certainly a fine feature. Illustrations of the winning designs appear on pp. 80, 98, and 99.

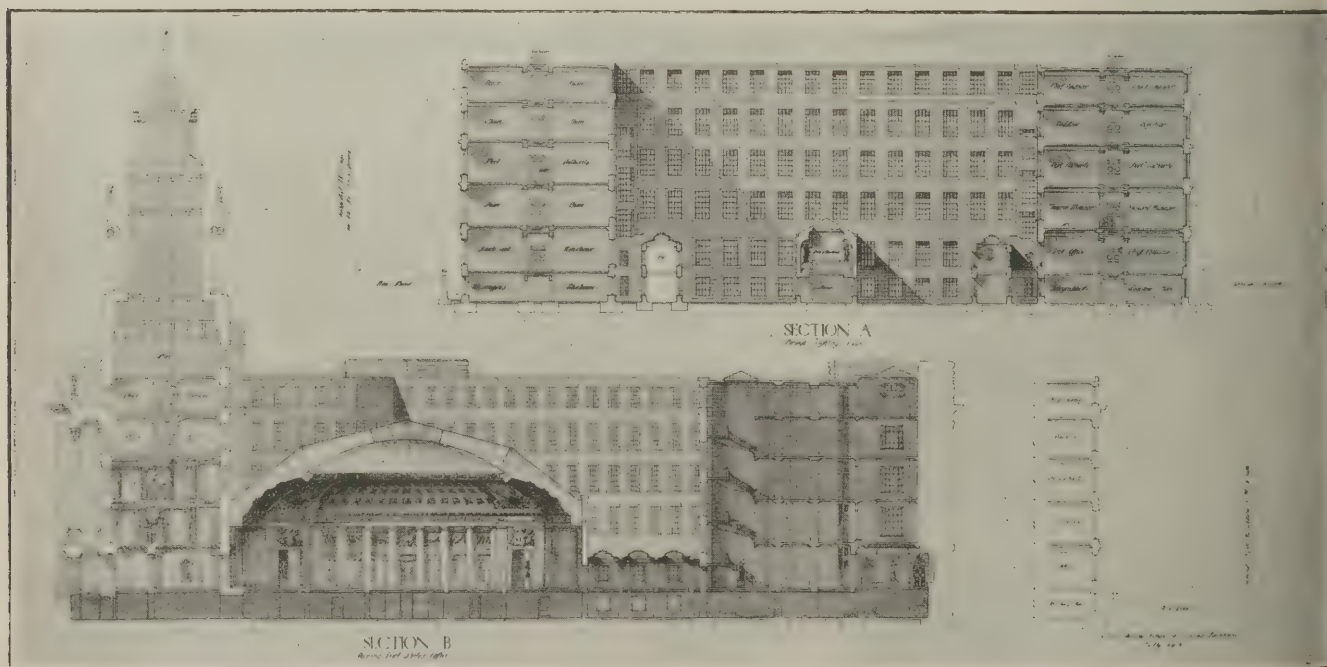
Messrs. Lanchester and Rickards have adopted a fan-shaped plan, axial with Trinity Square, the smaller end facing the square, and the lines of the plan expanding behind it. They have not got any impressive interior hall; a main corridor on the central axis leads to a rather small elliptical hall. The cross lines of the plan are laid out in concentric curves stretching across the building: the main feature is a corridor thirty feet wide, which branches out right and left as a "space for the public" between two sets of offices, whose counters are each available from these corridors. This is ingenious and symmetrical; but the offices abutting on the southern curve of these corridors have no light and air but from small light areas 30 feet wide, and going up three more storeys.

Offices for daily living in ought never to be dependent for light and air on well-holes of this kind; that point was fully discussed and settled (one would have supposed) at the time of the Admiralty competition, and it has been an understood thing since then that in the planning of public buildings, small inner courts ought only to be used for light to corridors, and not to rooms. A plan with rooms lighted from such small courts as these is rather belated. It is a pity, for the exterior design is on the whole the best; certainly the main tower, in its graceful and well-proportioned lines, is the best bit of architecture to be seen among the drawings. The treatment of the side and back elevations also, with a nearly unbroken order of columns in the lower portion, and the two rows of plain windows above, is broad, simple, and dignified. As architecture, we would rather

have seen this built than any other of the designs; we do not like the plan.

The next design on the wall we take to be Mr. Trlove's. It has great merit both in plan and design though not so striking in effect as those already mentioned. The plan is a parallelogram parallel with Trinity House, and Trinity Square is shown as laid out on rectilinear lines, with a broad walk axial with centre of the new building, and another axial with centre of the principal block of Trinity House; thus has got his buildings and site in architectural relation. The lines of the plan are exceedingly simple and straightforward. A central axial corridor leads past the grand staircase (above which the tower is built) into a public space 22 feet wide between the counters of the Port Rates and the Dock and Warehouse Departments, a running on to a north entrance or exit. All the corridors are simple, and small open courts are only used for light corridors. The large departmental offices just referred to are lighted in the centre by a top-light 90 feet by 50 feet; above the light is an open area of this space against the south side of which the Board-Room is placed, certainly a quieter position than the front one where most of the competitors have adopted. There is a simplicity about the exterior architecture, which in the front elevation shows a rusticated ground storey with Roman Doric order above it; above the architrave, windows are arranged in a kind of imitation of metopes (only higher in proportion) with short pilasters between. There is a great deal of thought and refinement in these and other details. The weak point on the exterior is the tower, which is heavy and deficient in marked character. But in other respects this is a very good design.

The next design in order of placing we presume to be Mr. Wray's. The plan is a long parallelogram running north and south, and the author has re-arranged Trinity Square Gardens into two rectangular gardens, one facing the new building and the other facing Trinity House, each with a central object axial with the centre line of the building. A top-lighted central avenue 30 feet wide runs from the front to the back of the plan, crossed in the centre by a transept hall, with main entrances and staircases at each end; these entrances, at each side of the plan, seem to be intended as the principal public entrances. The main portion of the ground plan south



NEW HEAD OFFICES FOR THE PORT OF LONDON AUTHORITY. SELECTED DESIGN: SECTIONS.

T. EDWIN COOPER, F.R.I.B.A., ARCHITECT.

(See also pp. 76, 79, 80, 98 and 99.)

the transept is occupied by a great Dock and Warehouse hall, with columns equally spaced all over it, and the north portion by a somewhat similar Port Rates Hall; these are top-lighted by the light over the central avenue, but would be somewhat deficient in light at the sides. On the floors above, the majority of the rooms get outside light, but some of them have light only from the central area. The Board Room is placed in too accidental a manner adjoining one of the side corridors. The central administration room in an establishment of this kind should always occupy a dignified central position; that is part of the architectural expression of plan. On the whole, this cannot be called a good plan, and the design probably owes its position among the six more to its bold architectural treatment, in which there is a certain element of genius. Over the vestibule within the entrance at the south end rises an immense square tower, the stalk, with battering lines, kept perfectly plain, but strengthened with quoins at the angles; on the top of this is a kind of small colonnaded temple with an octagonal cupola above it. The idea of thus marking the position of the Port Authority by a great tower visible from a long distance is really a very fine one, and the placing of a delicate architectural design at the top of an immense stalk is, in a sense, equally fine; but unfortunately this kind of architectural poetry never does get built, in modern days; we admire it on paper, but it is supposed to be unpractical, though there is really nothing against it except cost. The Venice campanile is just as unpractical, and no one would accept it in a modern competition; it has only been rebuilt now because it was there before. The effect of the tower is somewhat weakened by the base being shouldered back by the projecting blocks with colonnades on each side of the centre. But the whole is a fine architectural conception.

The last on the list is the one that we were informed is Mr. Robert Atkinson's. This is a remarkable plan; it is a square with the corners cut off, but placed diagonally on the site, so that the axial line points towards the centre of Trinity Square. The plan forms on the ground level a quadrangle with canted angles, with a great octagon hall in the centre, approached internally by three entrances and corridors, one from the centre of the Trinity Square front, the others from the two angles at the back. Around this centre hall runs a wide octagonal corridor, along the outer margin of which run the counters for the public, with the offices behind them. The inner octagon hall is apparently a space in which the public can circulate. On the whole the idea of the plan is a fine one, though in detail it has a good many awkward corners. What the author meant to do with the hall architecturally we are not allowed to judge; there being more drawings than could be conveniently accommodated in this corner of the room, the sections have been put out of the way somewhere; sections, of course, being regarded as things of no interest to visitors: a proceeding exceedingly unfair to the author, as the hall is obviously the principal point of his design. The principal elevation is only partially satisfactory; the massive side pavilions seem rather too heavy for the centre, and the projecting portico looks rather an excrescence; the façade needs what is sometimes called "pulling together" a little. But the main conception is a fine one.

We note with some amusement that the supplementary instructions for the final competition contain a reminder that where towers are introduced "they must in all cases have suitable supports shown to carry them"; a wholesome and very necessary admonition, when one remembers how many competition designs have shown lofty towers inserted, with a light heart, where the plans showed no adequate base for them, and sometimes no architectural motive for their introduction. A tower should mean something, and not merely be erected over some unimportant point in the plan, for the sake of an outside show.

The competition-designs show a high level of talent and of architectural interest, and are a credit to the archi-

tecs, while the manner in which they have been exhibited is not creditable to the promoters. After having all this architectural ability displayed on their scheme, the least they should have done would have been to exhibit them as thoroughly and effectively as possible, giving the names of the authors, instead of bundling them anonymously into a room too small to exhibit them, and leaving out any drawings which they could not conveniently find room for.

The British School at Rome.

WE are informed that the three faculties of architecture, painting, and sculpture have now met and appointed their officers. They have also drawn up the conditions and regulations for the award of the scholarships in their respective arts for the approval of the commissioners. The Faculty of Architecture have appointed Professor Reginald Blomfield, A.R.A., chairman, and Professor Reilly secretary; the Faculty of Painting, Sir Edward Poynter, Bart., P.R.A., chairman, and Mr. Henry Tonks secretary; and the Faculty of Sculpture, Sir Thomas Brock, K.C.B., R.A., chairman, and Mr. Stirling Lee secretary. The Faculty of Architecture who will act as a jury to award the Prix de Rome consists of Professor Blomfield, Professor Lethaby, Mr. Lutyens, Sir Robert Lorimer, Mr. Ernest Newton, Professor Reilly, Mr. John William Simpson, Mr. Leonard Stokes, and Sir Aston Webb.

The Question of Patriotism in Architecture.

THE discussion started by Mr. Voysey's paper on this subject, which is printed in the last issue of the "Architectural Association Journal," is a very interesting one, touching upon a good many difficult points; but the main trend of it is decidedly against Mr. Voysey's position. As Mr. Keen observed, the Gothic revival taught us this lesson, that it had to fail because we are no longer Gothic; that the Gothic tradition cannot be conjured back into any vitality because our character and disposition, and our social conditions, have entirely changed. We have, as he said, to produce our architecture at the drawing-board and by means of specifications and bills of quantities; let us be honest and admit it, and not pretend that we are treading in the steps of our ancient brethren, who produced architecture under quite different conditions. He might have added an even stronger point; we are faced to-day by the necessity of producing complicated and yet convenient planning, which can only be studied and thought out on paper. Plan was always, in an architectural sense, the basis of architecture; but formerly it was only on the simplest and broadest lines. Even as late as the Jacobean house there was no planning in the modern sense of the word; one room opened out of another in the most naïve and unstudied fashion. Complicated planning is essentially a modern art, and the problem for the architect is to make it convenient and suitable for its purpose while preserving a broad and effective disposition of the whole, as the basis of a broad and effective architectural expression; a very difficult problem, often missed. And as to a national quality of style, that is hardly any longer possible; with the development of books and travel architecture necessarily tends to become more and more cosmopolitan. And, as Mr. Harrison Townsend suggested, if we are to confine our architectural knowledge to our own country, why not go a step further and make it a parochial thing and simply confine it to a district? That might really have been the case in early times; in fact, the architecture of Italy before the Renaissance period was to a considerable extent an architecture of districts. Mr. Bolton made a good point when he said that St. Paul's was not altogether exotic architecture, seeing that the main feature in its plan is actually derived from Ely. Mr. Allan Potter spoke with sense as to the study of the Orders, which ought, he said, to be taught, on the same

principle that Greek and Latin were taught; not that people might write in Latin, but that they might write good English; in fact, no one thoroughly understands English without some knowledge of Greek and Latin, on which a great deal of English is based. And the Classic Order is really at the root of almost everything in European architecture. The study of it is also, as Mr. Bolton rightly pointed out, the best lesson in the study of proportion.

Conciliation and Working Agreements.

THE evidence given before the Industrial Council last week by prominent representatives of building trades employers brought out some very interesting points. Mr. A. G. White, the secretary of the National Federation, gave a very lucid account of the operations of the conciliation system which has been so successful in the prevention of strikes and lock-outs in the trade, by bringing together in calm discussion of the matters at issue the duly accredited representatives of both sides. There can be no doubt that, as in effect Mr. White said, the system has had a marked effect in improving the relationship between the employers and the unions, by substituting organised discussion for casual contention. By meeting each other face to face in orderly array, the masters and men have arrived at a better understanding of each other, with increased mutual respect, with the result that apparently much unnecessary bitterness has been eliminated, and the whole tone and temper of the industry has been improved. Of immense value in itself, this moral effect is perforce coincident with the prevention of the enormous waste of substance by both sides that is so lamentable a feature of industrial warfare. It may, indeed, be pretty safely said that what either side may seem to lose by occasional concession comes back in the long run by the preservation of industrial peace; so that it is difficult to avoid the somewhat quaint conclusion that through conciliation either side gains more than it loses, whereas through the more barbarous methods of settlement both sides are bound to lose heavily, and the winners must lose in the aggregate far more than they temporarily gain; besides which, the whole community is made to suffer sympathetically from the economic waste that ensues upon organised and protracted idleness. Another point upon which Mr. White gave evidence seemed to touch upon the much-canvassed matter of the fair-wages clause. "He agreed," he is reported to have said, "that it was unfair that where employers were competing for the same contract some should be allowed to pay lower rates." From this it may be deduced that the organised employers are as much interested in the maintenance of the fair-wages clause as are the union workmen; although one's general impression is that whereas the latter are constantly clamouring for its adoption, the former always seem to range themselves in opposition to it—why, it is difficult to understand, seeing that, as we have said, its effect is to prevent the unfair competition which would result from unrestricted liberty of unorganised employers to cut down the cost of labour. Mr. White seemed further to suggest that there ought to be some authoritative means of enforcing agreements between the employers' organisations and the unions. At present, either party can with impunity play fast and loose with any agreement to abide by certain terms and conditions for a given period. It is usually the men who repudiate their agreements; and no doubt employers have often suffered heavy losses by making advance contracts that have been based upon agreements which the men have refused to honour to the fulness of time. To make these agreements legally as well as morally binding would therefore seem to be merely just; but the matter is not nearly so simple as at first sight it might appear. As the corporate sense of honour is not nearly so strong as the individual sense, so the corporate legal liability of a fluctuating crowd is extremely evasive. It is practicable

to bind over an individual to keep the peace, but there are technical and substantial reasons for regarding trade unions in an impersonal and irresponsible aspect. If these difficulties could be overcome, and if either side could be compelled, under pains and penalties, to keep its agreements, then, in self-protection, one side or the other—certainly the union side—would refuse to be bound for any considerable period, and would thus stultify the desired effect, and would be very reluctant to commit themselves to any agreement at all. We fear, therefore, that the legal enforcement of working agreements is as far off as, say, the legal enforcement of the rules of cricket; and, on the whole, we should suppose that the master builders will get on very well by continuing their excellent efforts to gain the confidence of the workmen, whom they may ultimately succeed in persuading to keep to their agreements by showing them that to do otherwise "is not cricket." We should like to see these subjects threshed out at the half-yearly meeting of the Federation, which is to be held at Nottingham next week (July 30 and 31), but fear that the discussion of the Insurance Act which is on the agenda will leave but little time for other matters.

Hastings Castle.

THERE is an odd blending of ancient and modern in the announcement that Hastings Castle is to be sold by auction on Friday next: Arviragus and the auctioneer being separated by so long a stretch of time and the latter endeavouring to "knock down" what the former (*circa* 50 A.D.) reputedly put up. Who it was that really caused the erection of the castle is not definitely known, the attribution to Arviragus being merely a conjecture of Leland's. There have been those who would date it even earlier than the Roman occupation, while there are others who suppose it to be of much later date. Very little is known of its history until we come to the middle ages, when it was used as the English residence of the Earl of Eu, from whose family it passed into the hands of the Earl of Huntingdon. In 1591 it was purchased by the Pelhams, whose representative, the present Earl of Chichester, is about to offer it for sale. It is said to have been abandoned as a place of defence in the reign of Henry III.; and at present it wears the aspect of a "cureless ruin," although possibly a judicious use of the grouting machine which Sir Francis Fox has employed to such good purpose at Winchester and elsewhere might ensure it an indefinite lease of life. Francis Grose, the antiquary at whom Burns poked pawky fun and who flourished in the latter half of the eighteenth century, included it in his survey. "The artificial part of this fortress," he writes, "are in shape nearest two sides of an oblique spherical triangle, having the point of the angle rounded off. The bast or south side completing the triangle is formed by a perpendicular of craggy cliff, in length measuring about 400 ft., which seems to have had no wall or other fortification. The east side is made by a plain wall, without tower or other defence. This wall measures nearly 300 ft. Its adjoining side, which faces the north-west, is about the same length as the rock—namely, 400 ft. The area included is nearly an acre and a fifth. The walls, which are nowhere entire, are about 8 ft. thick. The gateway was on the north side, near the northernmost angle; it is now demolished. Near it, to the westward, is the remains of a small tower, enclosing a circular flight of stairs; and on the same side, further on the west, is [are] a Sallyport and ruins of another tower." In 1825, Mr. Kaye, architect, of London, conducted excavations by which much interesting work was uncovered, including the original entrance gateway, which was flanked by two circular towers, and where the walls were found to be 12 ft. thick. It is suggested that the Hastings Corporation should buy these interesting and picturesque ruins, which, vulgarly speaking, are a great asset to the town, of which they are a dominant if somewhat incongruous feature.

THE SALVING OF WINCHESTER CATHEDRAL.

It was because Winchester Cathedral was consecrated on St. Swithin's Day, 1093, that St. Swithin's Day, 1912—that is to say, July 15th inst.—was chosen for the day of thanksgiving offered for the preservation of the cathedral from disaster. His service was attended by the King and Queen; and the King, in reply to the address from the citizens of England's ancient capital, said of it that "Few cities can claim to have played so notable a part in the early history of this realm, and its citizens may feel just pride in the memories of the fact brought constantly before them by the many old buildings which are still happily preserved to adorn their beautiful city. We rejoice with you," His Majesty added, "that the magnificent cathedral, which has stood for many centuries as a monument of the piety and art of our forefathers, has, by the triumph of engineering knowledge, been saved from imminent risk of ruin."

Mr. T. G. Jackson, R.A., who has skilfully averted the threatened disaster, and restored the cathedral to soundness, has explained in pretty full detail the measures he took to endow the venerable and tottering building with a new lease of life. The account of the work, as given in his last report to the Dean and Chapter, is of so much interest—practical and at times almost dramatic—that its repetition here, together with a series of illustrations from photographs taken at various stages of the progress of the work, will doubtless be valued as a timely record of a remarkable achievement in restoration.

"It is hardly necessary to repeat," Mr. Jackson writes in his report, "that the cause of all the mischief is the nature of the foundation. The whole cathedral stands on a bed of compressible loamy soil overlying peat which in some places is 7 ft. thick. This rests generally, at a depth of from 20 ft. to 24 ft., on a compact hard gravel, heavily charged with water, but in some cases there is a thin bed of soft chalky silt between the two. It would hardly be possible to find a worse foundation on which to place a heavy building. The case is complicated by the fact that the whole of the subsoil at the depth of 10 ft., and in some seasons less, is charged with water, and it was on reaching this that the old foundations stopped, the Norman and mediæval builders having no means of coping with the difficulty.

"The first part that excited serious alarm was the south wall of Bishop de Lucy's retro-choir. This wall had sunk from 7 in. in the middle to nearly 2 ft. at the east end, and had split off from the Norman work to the west of it, leaving a crack 5 in. wide.

"On examination it was found that the wall rested on a double layer of beech trees laid crossways, which had been forced down into the soft ground to the extent first

mentioned. The north side was not much better, and in both cases the vaults had overpowered the walls and thrust them out of the perpendicular, tearing the buttress piers, on which the thrust was concentrated, away from the curtain walls between them. This movement of the walls had dislocated the stone vaults, which were bulged and cracked in all directions, the ribs having sunk so badly as to have lost their curve of stability, and being only prevented from falling by being bolted to timbering above. The situation was critical, for on February 26, 1906, a stone did actually fall from the groining of the north presbytery aisle near Bishop Waynesflete's chantry, and more was ready to follow.

"The vaulting of the crypts was disturbed throughout, partly by the movement of the walls and partly by the settlement of the piers from which the vaulting sprang.

"The condition of the choir and choir aisles was not quite so dangerous as that of the presbytery, but the walls were seriously cracked, and the vaulting of the aisles so much disturbed that parts were actually unsafe.

"The great transepts of the original Norman building were in a condition to cause the gravest anxiety. Cracks had appeared in the walls of the north transept so large that daylight could be seen through them; and both the north end and the side walls were dislocated in all directions. But the south transept was far worse, the end wall being broken away by great fissures from the side walls, and having an inclination of over 4 ft. in a height of 120, which nearly brought the centre of gravity outside the base. The side walls were also badly ruptured, and that on the east inclined seriously outwards.

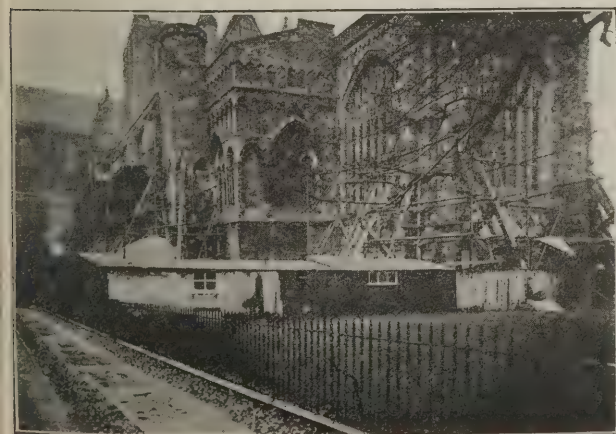
"It was expected that farther westward the foundation would not be so bad, but we were disappointed to find it no better in the nave than at the east end. . . .

"I need hardly say that the problem before me when you consulted me in 1905 was very difficult of solution.

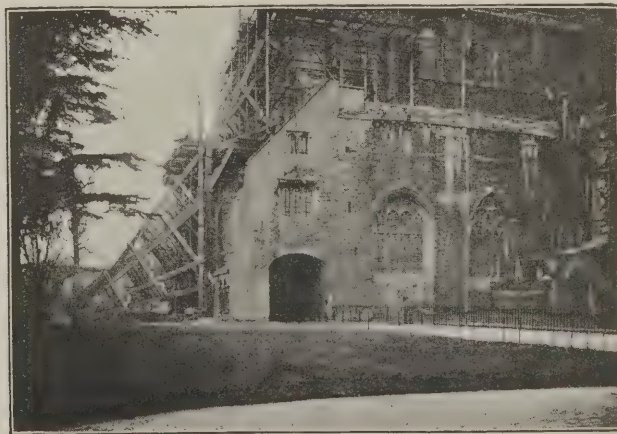
"It was obviously necessary to replace the soft foundation by something solid, but the first hard bottom to be found was the gravel bed at a depth of 20 ft. and more, 10 ft. below water-level. The underpinning on to the gravel of one corner of the church which I first undertook was not altogether satisfactory, and proved very expensive. With your consent I thereupon consulted my friend Mr. Francis Fox, the civil engineer, who had, I knew, great experience of subaqueous building, and by his advice a diver was employed to lay the lower courses of the underpinning under water, on which the mason and bricklayers carried the rest up to the old foundations.

"In this way the retro-choir and Lady-chapel were underpinned successfully.

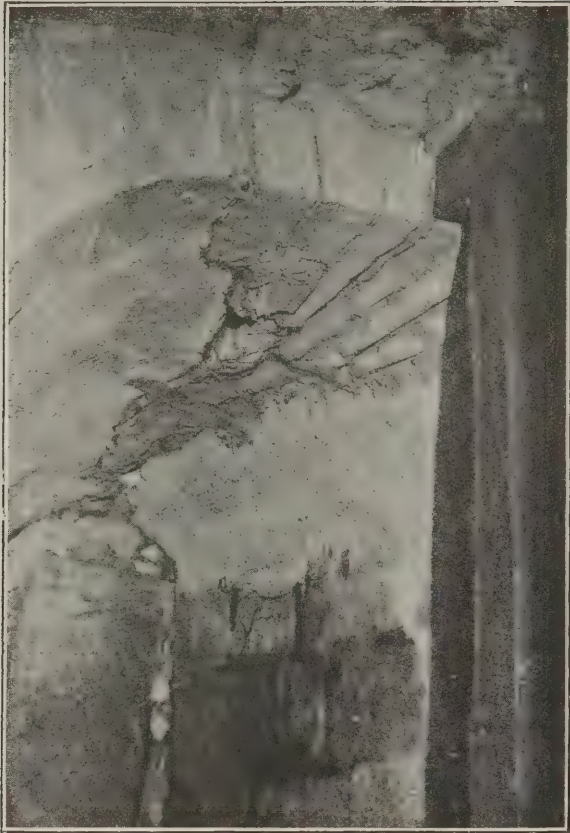
"The question then was how far to continue the underpinning of the rest of the cathedral. The whole of it stood on the same soft beds, and the ideal remedy, of course, would have been to underpin it all on the gravel stratum 20 ft. or 24 ft. down. This was so gigantic an undertaking, involving, among other things, taking



East End.



Shoring-up of South Transept.



EAST END OF SOUTH AISLE OF THE ALDIN CRYPT
BEFORE REPAIR.

down and reconstructing the chantries, that I naturally sought an alternative. It seemed to me that the great piers of the interior must in the course of more than 800 years have compressed the peat to the utmost, provided lateral expansion were prevented, and that consequently if the outer walls were underpinned down to the gravel and the interior soil confined, this result might be obtained. It was obvious that the outer walls, at all events, must be underpinned at once to prevent their falling, whether the interior were dealt with or not.

"On this principle the repairs have been conducted, and the underpinning has been confined to the outer walls. Experience alone can show whether what we have done is sufficient, but from accurate observations that have been made and regularly continued up to the present time there is good reason to believe that the main fabric is now stable, and that the principle on which we worked is just.

"The most hazardous part of the operations has naturally been the south transept. To underpin so vast a wall, 120 ft. high and nearly 4 ft. 6 in. out of the upright, required some courage. It has, however, been done; the lower part has been strengthened by bringing it forward with large buttresses, and the whole is strongly chained back to the side walls with iron ties. The shoring was slacked last August, and as no movement has been detected it is now being removed.

"Of other work, the groining of De Lucy's Presbytery has been partly reconstructed and partly repaired; the flying buttresses of the choir have been reset, and those of the nave aisles repaired; the groining of the crypts has been grouted and made good, and some of the columns have been taken out and refixed on new foundations. The cracks of the main walls, of which there were more than 100 in all parts of the building, have been bonded with hard stone, and grouted full of liquid cement with the Greathead grouting machine, which has been of the most valuable service. The tower has been strapped together with iron. The west end has been repaired and the pinnacles restored, but the foundations of this part have not been touched.

"The south nave wall, which was actually in move-

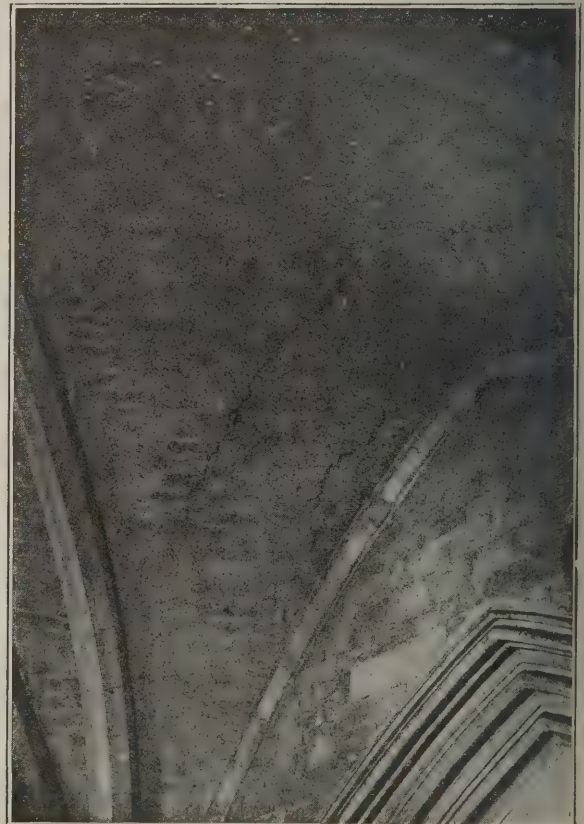


WINCHESTER CATHEDRAL, FROM THE NORTH-WEST.
From "The Cathedrals of England and Wales," by Francis Bond (Batsford).

ment towards a fall, has been secured by buttresses which are arched over the inner walk along the south side of the church; and these are the only evidence above ground of all that has been done to secure the building.

"The work now approaching an end has been one of unusual difficulty, and has made constant demands upon one's invention and resources. We might, as I have shown, have done more; I am sure we could not have done less. I was strongly urged by more than one adviser to take down and rebuild the south side of De Lucy's work and the great south gable of the transept. It seemed to me that it was better to preserve than if it were possible, and they are therefore still standing and I trust will stand for many generations."

Mr. (now Sir) Francis Fox, M.Inst.C.E., in an article of "Modern Practice in the Decoration of Old Buildings," which appeared in the May (1912) issue of "The Architectural Review," gave a brief description of the grouting



CENTRE BAY TO CENTRE VAULT IN THE PRESBYTERY
BEFORE REPAIR.



WINCHESTER CATHEDRAL, FROM THE SOUTH-EAST.
from "The Cathedrals of England and Wales," by Francis Bond (Batsford).

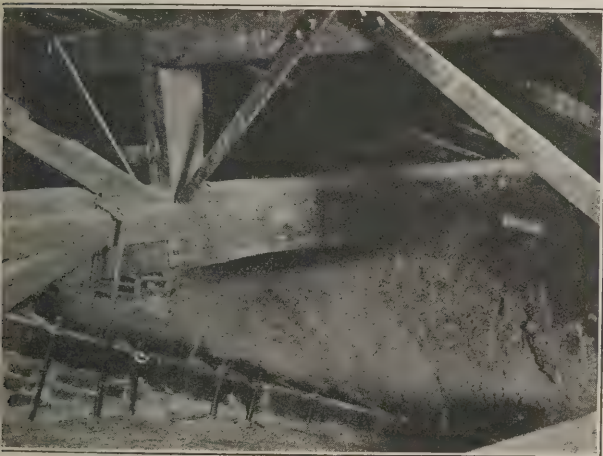
machine, which, originally invented by the late Mr. Treathhead for use in the electric tube railways of London, consists of an iron receiver or reservoir, into which, by means of pumps, air can be forced under any pressure up to 100 lb. to the inch. This receiver is connected by a flexible tube to another portion of the apparatus called the grouting pan, which is in fact a churn furnished with a handle and spindle to which are attached arms or beaters. The proper proportions of cement and water, and in certain cases sand, are then placed inside, the lid is screwed down, and the contents are churned up into the consistency of cream. This is

now ready to be blown into the crack, the mouth of which on either side of the wall has meanwhile been clayed up to prevent the grout from escaping. The compressed air is then admitted to the grouting pan, and so soon as the necessary valve is opened the contents are discharged into the wall.

In the same article the author eulogises the work done at Winchester single-handed by the diver, Mr. William Robert Walker, whose six years' work is all the more remarkable from the fact that it was all done in the dark and by feeling. On leaving the cathedral after the ceremony, the King and Queen shook hands with Mr. Walker, as well as with Mr. T. G. Jackson, the architect; Mr. Francis Fox, the engineer; and Mr. Thompson, of Peterborough, the contractor. An account of the work, derived from a paper read by Mr. T. G. Jackson before the St. Paul's Ecclesiological Society, was printed in our issue of November 16, 1910.

In a letter to "The Times," Mr. Jackson very gracefully acknowledges the services of Messrs. Thompson, of Peterborough, the contractors, to whose peculiar skill and extensive experience in ecclesiastical work he cordially expresses his indebtedness; and he furthermore adds: "I wish also to bear witness to the zeal and attention bestowed on the work by my clerk of works, Mr. Edwin Long, who has been with me for nearly forty years; and by Mr. Ferrar, the contractors' foreman."

Mr. (now Sir Francis) Fox, as we have recorded among our "News Items," has just been honoured with a knighthood.



Iron straps employed to prevent vaulting from falling.



New brick footings inserted under walls.



Repairing the plinth.

MR. A. G. WHITE ON BUILDING
TRADES CONCILIATION.

At the resumption of the Industrial Council's inquiry, last Wednesday, at Winchester House, St. James's Square, Sir George Askwith in the chair, Mr. A. G. White, secretary of the National Federation of Builders, explained the methods by which strikes in the trade were, as far as possible, avoided in the trade, and said that there was no stoppage of work pending final exhaustion of their conciliatory measures. There was a national scheme for the adjustment of disputes. They could then resolve to resort to the arbitrament of the strike or lock-out. The original scheme of conciliation had been frequently altered, and its value was so appreciated that efforts were made to improve it as experience suggested. Loyalty was displayed to keep agreements. Since 1904 they incorporated builders' labourers in the scheme. If there was a local dispute all the employers would be invited to discuss some given policy, and they generally followed the lead given by the federation. Their relations with the unions were most satisfactory, compared with what existed before the scheme of conciliation. They did not discriminate between unionists and non-unionists, but did not prevent the men using persuasive measures to get members of their unions. In the case of breaches of agreements or awards, complaints were made to the individual or to the officials of the associations. Failing satisfactory understanding the matter was referred to the Conciliation Board, which had generally been successful in making the parties "toe the line." There were no monetary penalties. Since 1904 there had been no strike or lock-out. London was not in the national scheme, but they had a parallel arrangement. He believed that organised workers forced employers to become organised. He agreed that it was unfair that where employers were competing for the same contract some should be allowed to pay lower rates. Agreements were made for a year, determinable by six months' notice, but sometimes they lasted for ten or twelve years. Agreements were enforced where men were well organised throughout the Federated area because they were in a position to secure their demands. He agreed to conditional agreements being enforced upon employers who were not members of the Federation, but he would not make it compulsory for non-unionists to join the unions which made the agreements. There was a system of preferential trading among Federated employers. The inducements to employers to stay out of the Federation were considerable, including the securing of cheaper labour, and they found they would get their agreements best enforced where the operatives were well organised. So far as agreements were concerned, he favoured their compulsion by law upon those who were outside organisations, but not before they were entered into. There was a moral pressure among employers of higher paid districts to raise the rates of lower paid districts.

In reply to Sir Hugh Bell, witness said the self-denying ordinance of not subletting contracts to sub-contractors who were not in the association, or of sub-contractors not giving contracts to non-associated contractors, was, however, not always observed. As to preserving the right to strike or lock-out in spite of statutory obligation, witness held that when there was no agreement, or up to the time of an agreement, either party should have the right to strike or lock-out. Having entered into an agreement, how-

ever, there should be a determinable authority to whose decision they must submit and not strike or lock-out. On the termination of the agreement free action on either side was renewed. He admitted that both sides would be deprived of a powerful weapon either in the sympathetic strike or sympathetic lock-out, but sympathetic action was prevented at present owing to an agreement which subsisted in the trade.

Mr. James Wright (President of the National Federation of Builders) said he was generally in favour of what Mr. White had said, but he saw difficulties in enforcing higher rates upon lower rated districts.

Mr. Storrs, who had been chairman of the National Conciliation Board in the building trade since its inception, said the Board had worked very satisfactorily. He did not go quite so far as Mr. White, but he agreed mainly with what he had said.

Mr. Forsdike, representing the Yorkshire Building Trade Associations, also held that pressure should be brought to bear on employers who were outside the associations to make them fall into line.

Mr. R. W. Bertie, a non-associated builder in London, said that generally speculative builders in London paid more than associated employers. A bricklayer in a trade union was "enforced" by most rigid rules. "My experience of the British workman," he declared, "is that he is a jolly good fellow. He wants to be let alone, and he does not want any intimidation at all." He added that he was in favour of legal pressure being put on both masters and men to keep agreements. He was against intimidation.—"Morning Post."

IMPORTANT RIGHT-OF-WAY CASE.

In the Court of Appeal of the High Court of Justice last week, the Master of the Rolls, Lord Justice Farwell, and Lord Justice Kennedy, heard an appeal by the defendant in the case of Tottenham Urban District Council v. Rowley from a decision of Mr. Justice Joyce.

The plaintiffs' claim in the action was for trespass by the defendant upon the plaintiffs' land, known as Downhills Park, at Keston Road, Tottenham, and for damages for nuisance caused by the defendant's erecting an obstruction on the land, and for an injunction to restrain. Keston Road was recently made or set out. Houses had been built by the defendant on the southern side, and the land to the north of the alleged street belonged to the plaintiffs and was used as a public park. The southern portion of the land between the defendant's houses and the boundary of the plaintiffs' land had been made up as a road, leaving a strip of virgin soil between the made-up road and the boundary of the plaintiffs' land. The plaintiffs' land was separated from Keston Road by a wooden fence, erected by the plaintiffs some years before, and they had removed a portion of this fence so as to allow ingress and egress through the opening over the grass strip and to the made-up road. They used the opening for the purpose of carrying materials in connection with the building by them of a new school on their land at some little distance from the road. The defendant had blocked up this opening, and this was the reason for the present action by the plaintiffs.—The defendant's case was that Keston Road was a private road, and that, in any case, it was only the made-up part of the road which could be taken to be dedicated as a public highway, so that he owned the

strip of land between the road and the plaintiffs' fence. This the plaintiffs denied, and contended that the whole Keston Road, including this strip, had been dedicated to the public. Mr. Justice Joyce had held that the defendant had intended to dedicate the whole width of the road to the public as a highway, and that the user by the public had been sufficient to complete such dedication, and that the plaintiffs were therefore entitled to succeed. The Court upheld this decision, and dismissed the appeal.

THE RE-ROOFING OF GLASGOW
CATHEDRAL.

The reconstruction of the roofs of Glasgow Cathedral has now reached an advanced stage. The oldest lead that remained on the cathedral roof was that on the south transept, which bore the date 1739 on the east side, and on the west side of the roof is lead of the same date with the words, "Andrew Aiton, Provost." This lead was very bright, and probably contained a considerable amount of silver. The roof of the choir bore the date 1824 in several places, and this must have been the date of a considerable reconstruction as one of the bosses of the plaster vault also bore this date and the words "Andrew Crawford, plaisterer." Old dates on the lead, writes Mr. J. Jeff Waddell in the "Glasgow Herald," were 1843 on the nave—just a few years before the removal of the western towers—1824 on the north aisle of the choir, and 1824 on the south aisle. These show that constant supervision of the roofs had been necessary, and no doubt without that the cathedral had been a ruin to-day. Even the plaster ceiling of 1824 over the choir was the second plaster vault, for fragments of older larger lath were found adhering to the ancient timbers; and as still earlier date the ceiling was lined with oak in the form of a pointed trefoil, with ridge and rib and intermediate diagonal ribs, similar in design to those of the last plaster ceiling removed a year ago, which, however, had not the trefoil form, but was simply pointed. It was an alteration from the design of the fifteenth century ceiling in 1824 which did so much to weaken the structure, as in some cases the oak roof truss was almost cut in two and was then made up with pine to a new shape.

Mr. W. T. Oldrieve, of His Majesty's Board of Works, who has charge of the cathedral, has gathered all the evidence and reproduced the fifteenth century design of the choir roof with the addition of carved bosses. As the mediæval bosses had all disappeared Mr. Oldrieve had a free hand, and the result is a very fine ceiling, the general effect of which most very closely resemble the mediæval ceiling, although the decorative detail is different and includes modern subjects.

In contrast to the elaborate treatment of the choir and transepts is the simple design of the nave roof. When the modern plaster ceiling was removed, it was once seen that here the roof had been an open timber one, and the roof is being carefully restored to its mediæval form.

An interesting discovery was made when the plaster ceiling was removed at the west end of the nave. There at the north corner was a piece of the wall of the clock tower, which was demolished in the middle of last century. On further investigation it was found to contain foundations of the steps of the former stair which continued from the parapet of the nave to the parapet of the tower.

MESSRS. WAYGOOD AND CO.'S NEW PREMISES.

Having found it necessary to provide increased accommodation on account of the rapid development of their business, Messrs. R. Waygood and Co., Ltd., have erected a large addition to their workshops at Falmouth Road, London, S.E. The new building, for which Mr. M. E. Collins was the architect, was formally opened on July 16th by the Mayor of Southwark. In this new structure, which adjoins the existing works, Messrs. Waygood propose to concentrate the entire construction and fitting of the electrical apparatus. The raw material will be brought in at one end of the building, machined, and then passed along to the erection shop, where the various parts will be fitted together and sent to the despatch department. In conjunction with the building to which it is attached, the new one has the following clear superficial areas: Ground floor, 5,500 ft.; first and second floor galleries, 1,000 ft. respectively; basement, 6,000 ft. The combined buildings have a cubic contents of about 750,000 cub. ft. The total length of the new building is 250 ft., the height being 54 ft. from basement to roof.

Fire-resisting construction has been employed throughout, the walls being of brick, and the floors, roof, and internal supports of reinforced concrete. Iron pipes are arranged for ventilation and escape in case of fire, and all the skylights are fire-resisting. Internal and external fire-resisting staircases are fixed at both ends of the building; they are so arranged that, in the event of a fire, the landings of either stair afford immunity from asphyxiation by smoke. Hydrants are fixed throughout. Heating and ventilation are arranged so that the heating medium shall in any way vitiate the atmosphere. The new shop is electrically driven throughout, the power being obtained from the mains of the Southwark Borough Council. Four Vickers electric motors, each of 50 b.h.p., have been erected in the basement; they transmit power to line shafts running in trenches and to supplementary line shafts fitted overhead. The space between the galleries which run round the interior of the building is spanned by a large overhead electric crane, which, running the full length of the internal well, is capable of raising loads up to five tons at a rapid speed. Electric travelling cranes are also fitted in two of the side bays, one of these running the full length of the building. In addition

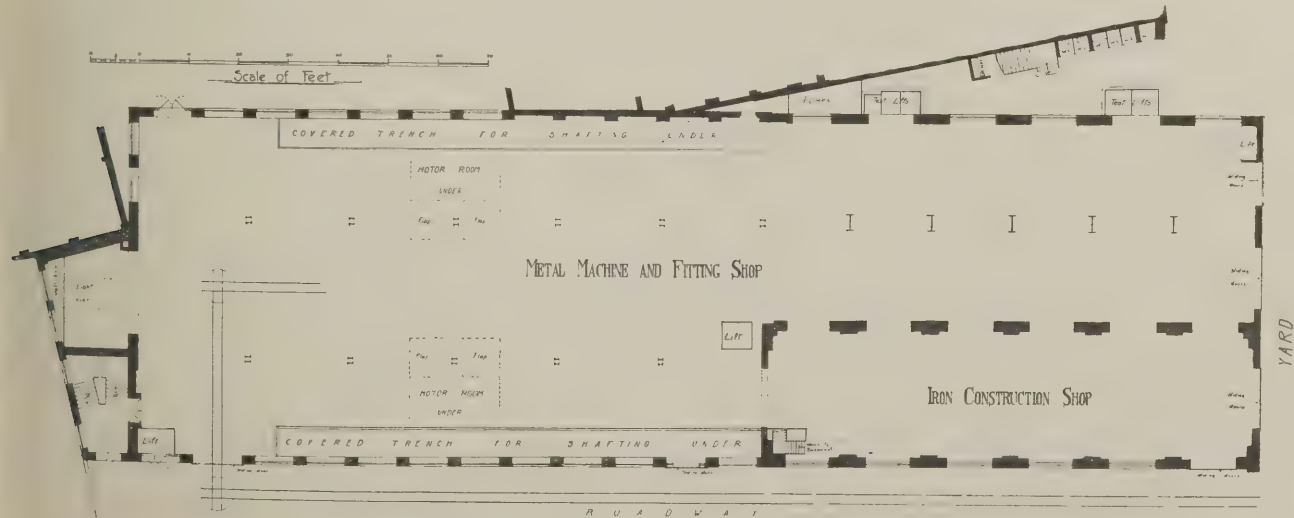


MESSRS. WAYGOOD & CO.'S NEW PREMISES. M. E. COLLINS, F.R.I.B.A., ARCHITECT.

to the staircases, two lifts are provided, one at each end of the building. The first is a standard electric lift, arranged for carrying both goods and staff, while the second is erected on the patented "electroil" system lately introduced by Messrs. Waygood and Co. The building contractors were Messrs. G. Parker and Sons, the sub-contractors being as follows: Messrs. Walter Jones and Sons (steelwork), Messrs. W. H. Wheeler and Co., Ltd. (wood paving), Messrs. Haden and Sons (heating and ventilating), Messrs. Hayward Brothers and Eckstein (roof work and glazing). The total cubic capacity of the buildings at present occupied by Messrs. Waygood and Co. is stated to be 1,700,000 cub. ft. After the luncheon, which was provided in the new building, the chairman, Mr. Henry C. Walker, M.I.M.E., in the course of an introductory speech, referred to the rapid growth of the company from the moment of its foundation up to the present time, a growth that had necessitated repeated additions and

enlargements. The firm could congratulate itself on possessing an unusually efficient staff.

The Mayor of Southwark then declared the building open, at the same time pressing a button on the platform, which instantly set a number of machines in motion. Afterwards, the Mayor presented cups and £10 notes to two employees, Mr. Harry Dowell and Mr. George Cross, who have been in the service of Messrs. Waygood and Co. for fifty-eight years. It was also arranged that a similar presentation should be made to Mr. Joe Livock, another old employee. A vote of thanks to the Mayor was moved by Captain Cecil W. Norton, M.P. (Assistant Postmaster-General), and seconded by Mr. H. Harmsworth. In the evening the firm's employees were entertained to a concert. It is of interest to note that the company has now over 1,000 employees in its various branches, and pays nearly £100,000 per annum in wages and salaries. Over 1,000 lifts and cranes are sold every year.



MESSRS. WAYGOOD & CO.'S NEW PREMISES.

NEWS ITEMS.

A new town-hall for Derby is in contemplation.

Leigh-on-Sea Urban District Council have appointed a town-planning committee—consisting of the Highways Committee!

The proposition of the Newcastle Town Hall Committee to build municipal offices at a cost of £100,000 has been shelved.

Exmouth Urban Council have agreed to the scheme for a new marine drive a mile long, to be formed at an estimated cost of £20,000.

The annual general meeting of the Builders' Benevolent Institution is being held to-day (July 24th) at Koh-i-Noor House, Kingsway, W.C.

Taunton Town Council have received a letter from the Taunton Market Trustees asking for a conference on the subject of providing a large hall in the town.

An executive and a general committee have been formed to carry out a proposal to erect a memorial, on some suitable site in London, to the late Sir W. S. Gilbert.

The foundation-stone of the new Baker Street Station of the Metropolitan Railway will be laid by Lord Abercromby to-day (July 24th). An illustrated account of the work was given in our issue of April 17th, 1912.

The plans of Messrs. Orpen and Jervis have been passed, and the tenders of Messrs. McLaughlin and Harvey have been accepted, for the building of the Church House and Primate Alexander Synod Hall in Armagh City. The 27th inst. is fixed for the formal ceremony of laying the foundation stone.

Knighthood of Mr. Francis Fox.

The King has been pleased to confer the honour of knighthood upon Mr. Francis Fox, M.Inst.C.E., the distinguished engineer who, as detailed elsewhere in the present issue, so ably assisted Mr. T. G. Jackson, R.A., in the work of preserving Winchester Cathedral, and he was among those presented to the King and Queen after the Thanksgiving Service on Monday week. He is son of the late Sir Charles Fox, and is a member of the firm of Sir Douglas Fox and Partners. He has been a consulting engineer in London since 1861. Among the engineering works with which he has been associated are the Simplon Tunnel, the Great Central Railway extension to London, the Hampstead and Great Northern and City Tube Railways, the Cape and Cairo Railway, and the supply of electrical power to the Witwatersrand mines.

Additions to Birmingham Art Gallery.

Ten new rooms which have been added to the Birmingham Art Gallery, and were formally opened on Wednesday last by the Lord Mayor of Birmingham, are part of a larger scheme of extension of the municipal buildings in which they are included. The architects, Messrs. H. V. Ashley and Winton Newman, F.F.R.I.B.A., of London, who secured the work in an open competition, had some difficult problems to solve in adapting their plans to old levels (the site falling from west to east), and in making the best of the masonry bridge (across Edmund Street) between the old and the new buildings. It is generally acknowledged that they have succeeded admirably. A fully and finely illustrated account of the Birmingham Council House extension appears in the "Architectural Review" for July.

THE R.I.B.A. FINAL EXAMINATION.

The Board of Architectural Education of the R.I.B.A. have issued the following further list of names of candidates for the Final Examination whose designs submitted under the various subjects of the Revised Testimonies of Study have been approved by the Board: *Subjects Ib., IIa., and III., Mr. K. Glover. Subject III., Mr. G. C. Charlewood, Mr. C. J. K. Clark.*

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

Lighting and Ventilation of Schools.

SIR,—I have read with much interest your criticism of Mr. Robson's book and the various letters which it has called forth.

Unfortunately, no one of your readers has taken up the question of south lighting as opposed to east and west lighting, and I should therefore like to make a few remarks upon this subject, both systems of which have their ardent supporters.

I have prepared two diagrams, No. 1 showing a school having east and west

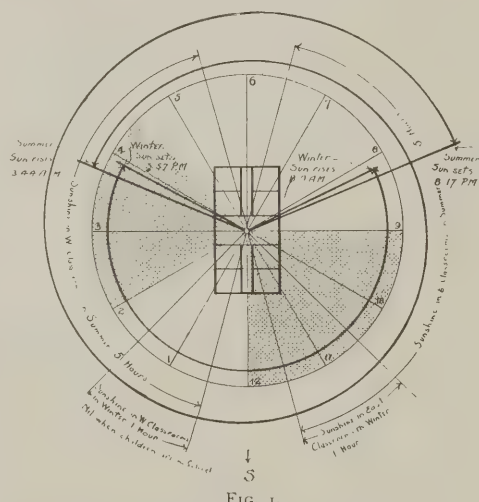


FIG. 1. SCHOOL WITH EAST AND WEST LIGHT.

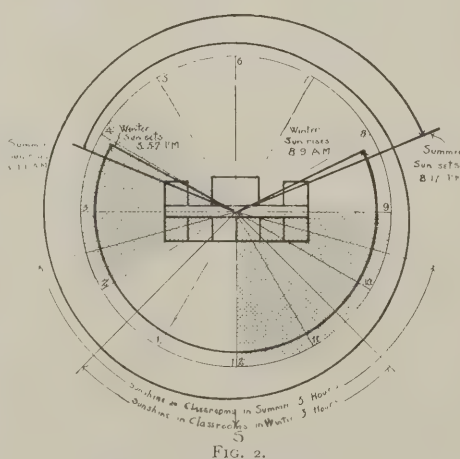


FIG. 2. CLASSROOMS FACING SOUTH.

light to three classrooms respectively, on each side, the fourth rooms being cloak rooms, etc. No. 2 shows a school having south light to six classrooms, the two remaining rooms being as above. The circle

is divided into twelve parts, representing the twelve hours of the day, and the shaded portions indicate the hours when the children are in the school. The hours of sunshine are the two extremes, the greatest and the least, i.e., height of summer and depth of winter.

In diagram No. 1 the sun starts shining into the three east classrooms at about 7 a.m. in the summer, and at 9 a.m. the full force of it is felt in the rooms. From about 9.30 till 11.30 the sun is shining directly into the scholars' eyes; latter, however, it is not so trying to them, as is getting near its zenith.

In the afternoon the scholars in the west classrooms get 2½ hours of brilliant sunshine, from 3.30 till 4.30; the sun shining directly into their eyes, and being fairly low is exceedingly trying.

In the winter, when the sun is needed, these rooms get practically no sun as it is not high enough to be effectively until about 10.30, and likewise is too low after 1.30, each set of rooms getting about one hour of slanting sunshine.

In diagram No. 2, with the classroom facing south, the sun does not commence to shine into the rooms until about 9.30, and from then until twelve it shines most behind them, and never in their eyes. From 2 till 2.30 it shines in their eyes, and very soon after that, goes off the south front altogether. In the winter the scholars get the benefit of any sun they may be.

Summing up, we get the following data: East and west classrooms in summer get between them five hours of hot sunlight and shining into the scholars' eyes (average) 1½ hours. Winter: Not more than 1½ hours between them. South classrooms in summer get three hours of hot sunshine, shining into the scholars' eyes half an hour. Winter: All get 1½ hours of sunshine.

Note.—These times are the hours when the scholars are in school.

I think this shows pretty well that the south aspect is the better.

As regards cross ventilation, I cannot speak of microscopic tests; but, speaking from the experience of having been in many schools, some with mechanical ventilation and some with natural, I can say that the latter have always felt very much fresher and sweeter to me, and I personally would infinitely prefer to work in one of these.

The Plenum system of ventilation I believe to be a good one, but on the count of expense, both in installation and in upkeep, it is almost impracticable for schools, but, as I have already said, natural ventilation seems to keep the school much fresher.

J. W. E. WILSON, JUN.

London, W.C.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—With reference to your interesting remarks on page 30 of your issue of July 10th, I would like to say that, while fully appreciating the spirit in which the remarks are made, I am yet unable to agree with your contentions. Provided hoppers are made so that the top edge of the hopper when open is above the bottom edge of the frame, the air is bound to take an upward direction however strong the wind. Moreover, if the hopper opens against a draught screen this is made even more certain. Assuming that the wind were too strong, would be no difficult matter to fix the hoppers so that they are only open half-way on the windward side, and this should effectually prevent any discomfort. I have tried the smoke test against the

hoppers and, hold the rocket in what position you will, I have never seen any down-draught from these hoppers. Taking your case of a calm, hot day, obviously the thing to do is to supplement the work of the hoppers by opening all the windows. In our Derbyshire schools every window is made open and the lights above the hoppers are hung on centres. When hoppers and swing lights are open they are all deflecting planes, and the air currents from all the openings are carried across the room in a similar direction. Obviously, when the pressure is very light nobody would think of obtaining ventilation by means of hoppers only.

As regards "everything in the open air being carried away," my contention is that, by having every window space to open, the air is moved so quickly that it is practically the same as the outside air under all conditions.

I have filled rooms of 9,000 cubic feet capacity with smoke and, by means of windows only, I have emptied those rooms in less than three minutes, so that the inside air is as clear as the outside.

As regards lighting from two sides, I am still of opinion, although, of course, not an eye expert, that this is preferable to light from one side. One gets more diffused light with practically no shadow, and surely this must be better than strong light coming from one side and casting a strong shadow on the opposite side of the students. In the lighting from one side only, the further the desks are away from the window, the less light do the children receive. Have you, sir, ever seen a classroom 25 ft. wide, with windows on one side only, adequately lighted its full width?

As to the room being cold in winter, that, in my opinion, is the crux of the question, and the reason why cross ventilation has been so much in disfavour. In the old days eight to ten square feet of heating surface per thousand cubic feet of contents were considered sufficient, but to keep up the temperature in a school practically every window had to be kept shut on cold days. Now we provide not less than thirty square feet per thousand, and it is only by such a large area of heating surface as this that a proper temperature and efficient ventilation can be maintained.

With reference to the observations of our correspondent "X," I have no idea of the conditions under which Professor Barnelly made his experiments, and without such information it is next to impossible to make any statements thereon. I am at a loss to understand how it is that the free movement of air was only above the level of the window sills. In the case to which I have referred above, the room was filled with smoke, and the space below the window sills was cleared quite as rapidly as the space above. The currents of air expanded and circulated to such an extent and so thoroughly that all smoke was removed. The other point about the inside and outside temperatures is covered by my remarks above respecting the amount of heating surface required.

I am receiving letters and verbal statements on all hands from teachers who have taught in the old-fashioned school and in the modern cross-ventilated one, and they state that the condition of health of both children and teachers is considerably better than under the old conditions, although, of course, this does not affect the case against mechanical ventilation.

For my own part, one has the satisfaction of knowing that cross ventilation is

being accepted throughout the country, and we have now a large number of deputations from all parts of the country to see the schools. The ventilation is simple, there is no machinery, and it teaches the children to live with windows open. At school one teaches the necessity of fresh air and of living and sleeping with windows open, yet under a system of mechanical ventilation directly a child enters the school he is told that unless the windows are kept shut the ventilation will not work.

In the case of mechanical ventilation, the initial cost and upkeep is considerably greater than with low pressure hot water. Are the advantages, if any, of mechanical ventilation so great as to warrant the extra expenditure?

GEORGE H. WIDDOWS.

Derby.

The Late D. H. Burnham.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In looking through a copy of the JOURNAL up at the library I noticed an appreciation of the late D. H. Burnham, architect, Chicago, and in doing so I came to the conclusion that the true keynote to his character and success must have gone a-missing, and it was this—I will tell it as it was told by the foreman on the job where it occurred in the early 'seventies, soon after the fire down on Randolph Street, not far from State where the building was being erected: The owner happened along one morning, at the same time that Burnham was there, and, ownerlike the world over, he thought some of the ornate work could be left off without materially injuring the building and yet making quite a saving in the cost of construction, winding up by saying that not one in five thousand would ever know or notice the difference, when Burnham instantly retorted—"But d— that one!" That was the man he feared, not the five thousand know-nothing unappreciatives. He did not belong to the get-rich-quick school of ethics, but to the school of merit. To him the promise was not to self alone, but to his children, and to his children's children. He meant to build for posterity, and his work was to be above reproach. But d— that one man was the keynote all through his life.

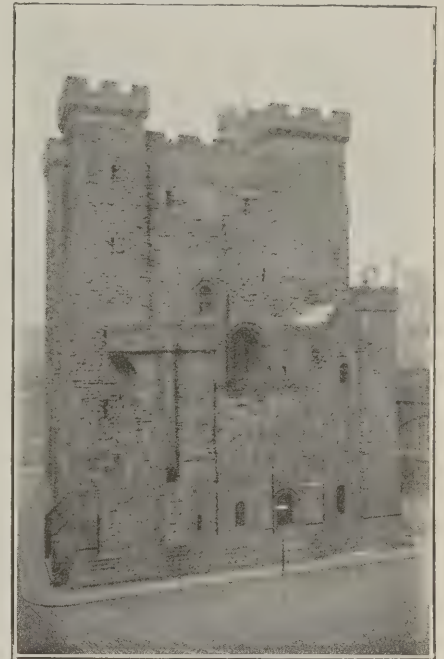
JOHN TURNBULL.

Vancouver, British Columbia.

[In condemning where he ought rather to have invoked a blessing, Mr. Burnham seems to have employed a peculiar American idiom?—ED.]

THE NORMAN KEEP, NEWCASTLE-UPON-TYNE.

Situated on a headland overlooking the River Tyne, and commanding a ravine which led down to a bridge over the river and for centuries formed one of the main routes of communication between Eng-

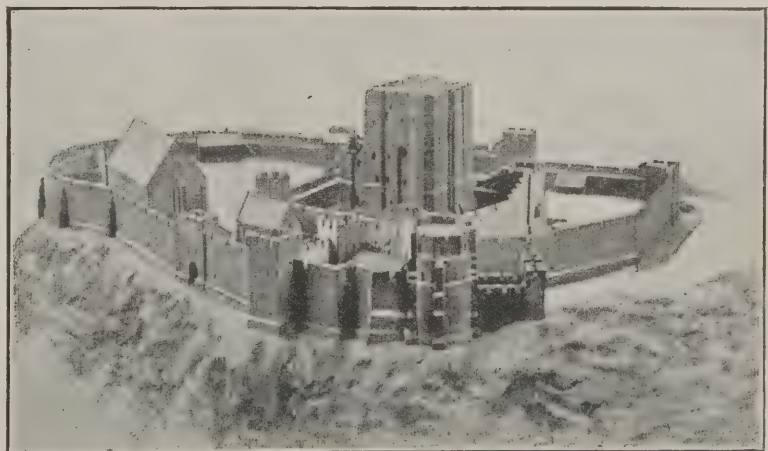


THE NORMAN KEEP.

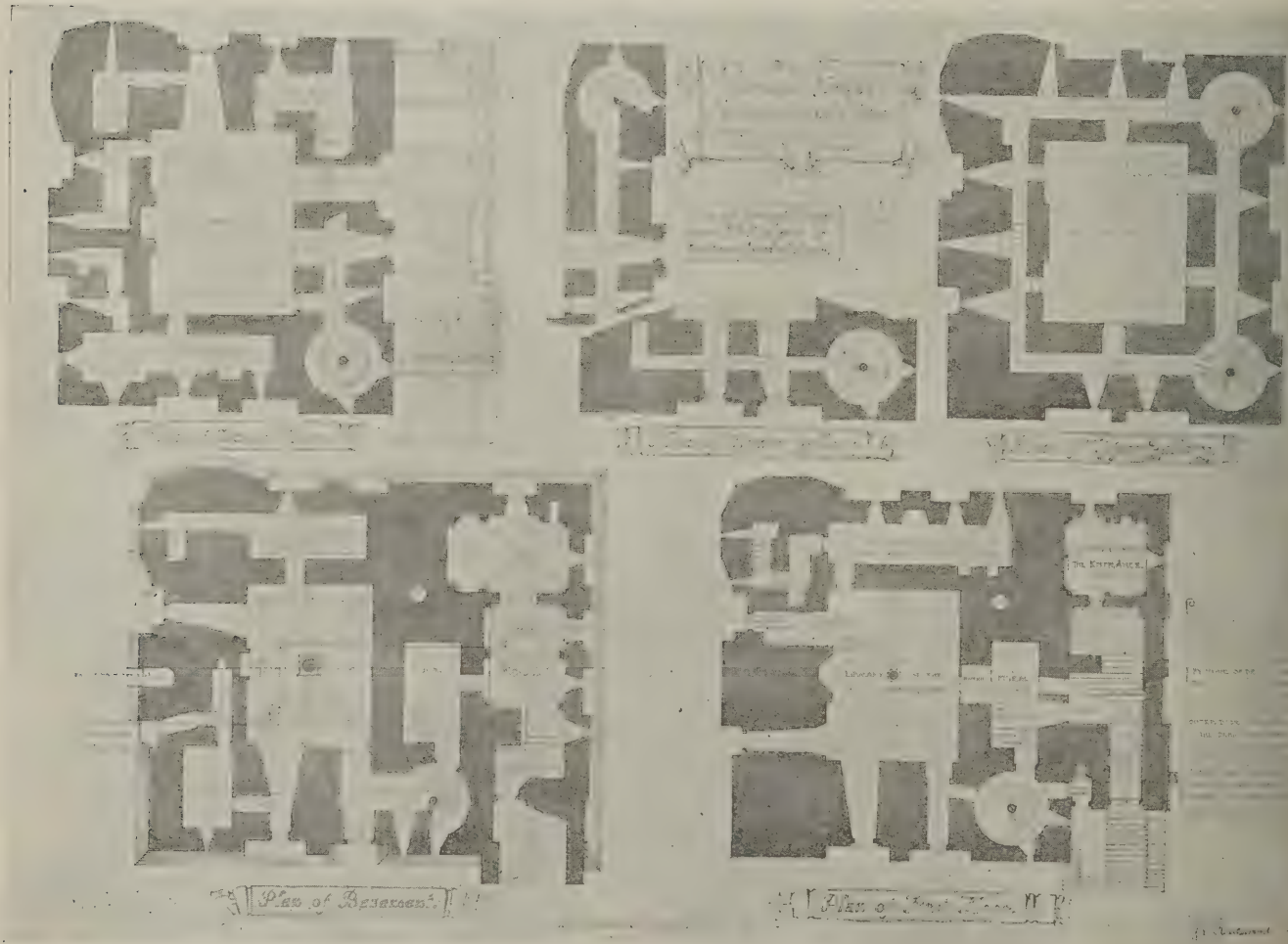
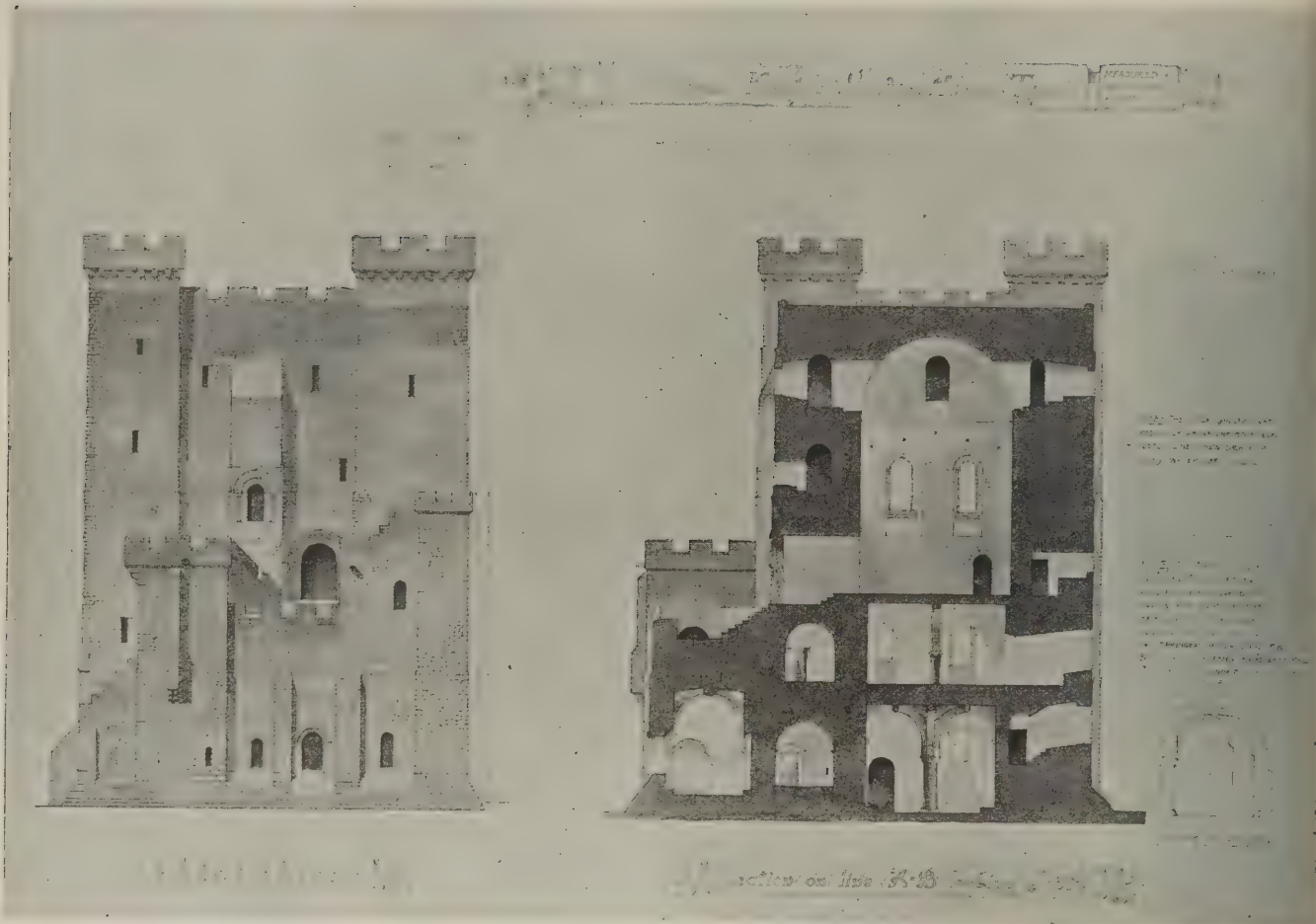
land and Scotland, the "New Castle upon Tyne" was a very important fortress in Norman and mediæval times.

A wooden stockade was erected by Robert, eldest son of William the Conqueror, in A.D. 1080. It was, however, superseded by another castle of which the keep or great tower still remains. Built under Henry II. in A.D. 1172-1177, it has all the characteristics of a Norman keep; its walls comprising vast masses of masonry pierced with small windows.

On the plan the keep is rectangular, with shallow buttresses, having turrets at the angles. The north-west turret is multi-angular, in which respect it differs from the others, which are either square or rectangular. Various reasons for this have been given; Mr. J. R. Boyle, in "Vestiges of Old Newcastle and Gateshead," suggests that this was done to mislead the



MODEL OF "THE NEW CASTLE UPON TYNE."



my, giving them the impression that it retained the staircase, and was therefore weak spot, whereas in reality it is the most solid corner of the building. Another more likely suggestion is that it was originally built in order to "support a ballista"—a large military engine used in defence.

Like the majority of the Norman keeps, the plan consists of a large room on each floor, with mural chambers of more or less importance opening out from it.

The largest room in the basement, now the guard-room, is vaulted in a very interesting manner. The vaulting is supported by eight semicircular arches which spring from a round central column, growing to the different spans necessitated by the oblong shape of the room. These arches spring at different levels, which enables the apex of each of them to be at the same distance from the floor. Professor Willis refers to this in his paper published in the R.I.B.A. transactions in 1902. Mr. F. Bond, in "Ecclesiastical Architecture in England," also refers to the springing of these arches as a very early use of *tas de charge* in England. This so-called guard-room was used as a town gaol at the beginning of last century, when a modern external doorway was made in the basement.

A beautiful example of decorative Transitional work is found in the little chapel in the basement under the entrance stair. In early times this chapel was only approached by means of an external doorway. The nave and chancel are richly vaulted, the moulding of the chancel arch being enriched with a triple chevron, while varieties of chevron and double cone ornaments are to be found in the arcade mouldings and vaulting. This work has had little restoration, but is still in excellent preservation.

The main entrance to the keep was up an external staircase, which was guarded at the foot by a small tower, which is now demolished.

The various floors of the castle are connected by a large newel stair in the south-east corner of the keep from the basement to the roof, while there is a second newel stair in the north-east corner from the second floor to the roof.

The principal room of the keep is on the second floor, surrounded by galleries and covered with a modern brick vault. It was stated by some authorities that this room was divided into several floors, but in the light of recent investigations this has been found to be incorrect. The roof, battlements, and flag turret are a modern innovation.

G. E. CHARLEWOOD.

Marble Work at the British Museum.

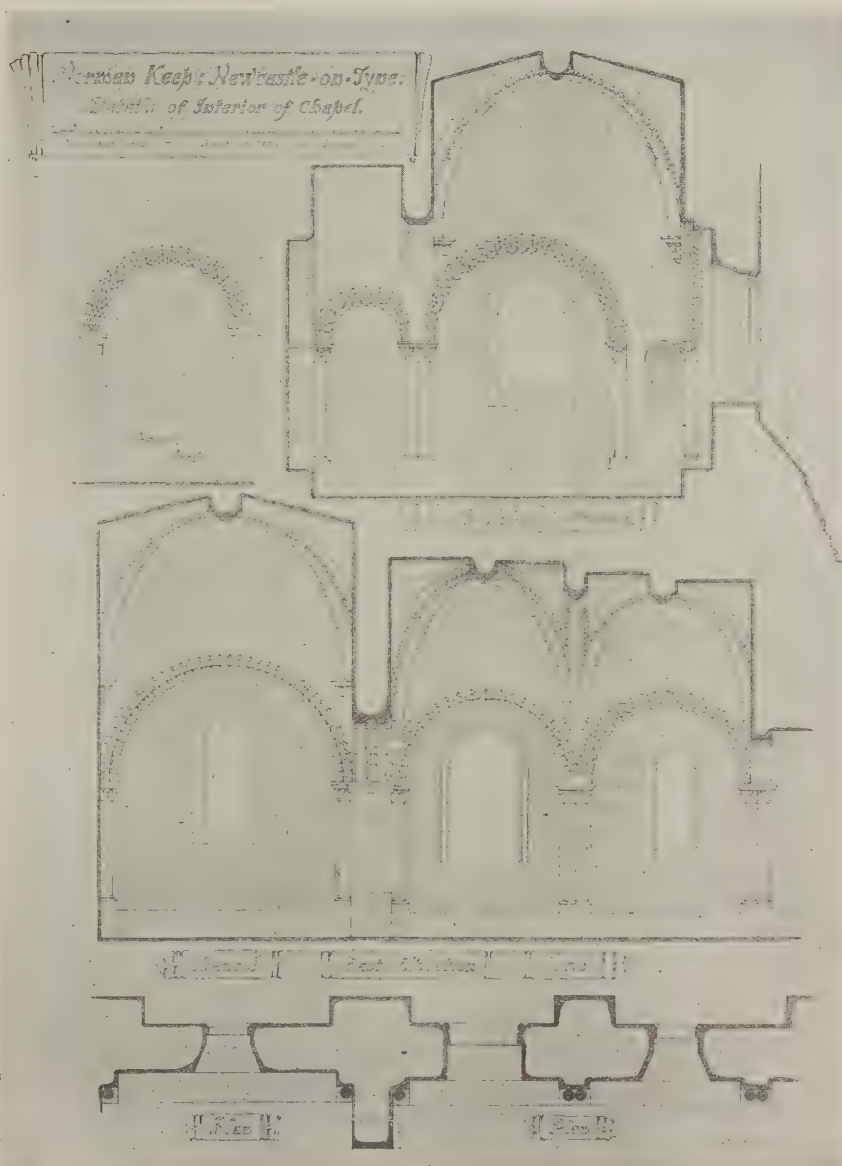
In the House of Commons on Monday, July 8th, Mr. Tyson Wilson asked the representative of the First Commissioner of Works whether the contractors for some marble work in connection with the British Museum had been granted permission to sublet part of the contract abroad; and whether other points of view besides those of the employers were taken into consideration, in view of the fact that competent workmen could be obtained in this country, and, if they were employed, the fair-wage clause would operate.

Mr. Wedgwood Benn replied: The contractors for the marble work in connection with the British Museum have been granted permission in accordance with the custom of the trade to sublet a part of the contract abroad. This is in conformity with the fair-wages resolution.



THE CHAPEL IN THE KEEP.

Photo: Mr. P. Frewis.



STRUCTURAL REQUIREMENTS OF THE FACTORY AND WORKSHOP ACTS.

A Home Office Memorandum upon the Structural Requirements of the Factory and Workshop Acts which has just been issued contains additional information to that which is supplied in the annual volume of "Factory Orders."

1. Means of Escape from Fire.

EVERY factory or workshop in which more than forty persons are to be employed must be furnished with a certificate from the local authority that the building is provided with such means of escape as can reasonably be required in the circumstances of each case; which certificate must specify in detail the means of escape so provided (Factory and Workshop Act, 1901, sec. 14). Further, the local authority is empowered (sec. 15) to make bye-laws applicable to every factory and workshop irrespectively of the number of persons employed. [The model bye-laws issued by the Local Government Board for England and Wales are printed in an appendix to this memorandum.]

Under sec. 16 (2) of the Act, the doors of every room in which more than ten persons are to be employed must be either sliding or constructed so as to open outwards.

For further information as to means of fire prevention and escape in case of fire, reference may be made to the reports of the British Fire Prevention Committee.

2. Sanitary Accommodation.

Every factory or workshop must be provided with sufficient and suitable sanitary accommodation, and where persons of both sexes are to be employed this must be separate for persons of each sex (Factory and Workshop Act, 1901, sec. 9; Public Health (London) Act, 1891, sec. 38; Public Health Acts Amendment Act, 1890, sec. 22). For those parts of England, Wales, and Ireland in which the two Acts last named are not in force, and for the whole of Scotland, further detail as to what is to be regarded as "sufficient and suitable" is prescribed by the Order of the Secretary of State of February 4th, 1903; and even where not obligatory this may serve as a general standard. The Order requires, *inter alia*, that the closets shall be:— (a) Sufficient in number, namely, not less than one for every twenty-five females, and one for every twenty-five males (provided that if there be more than 100 males, and sufficient urinal accommodation is also provided, there need only be one for every twenty-five up to the first 100, and one for every forty after). (b) Accessible to the persons employed. (c) Separated [As regards bakehouses this is obligatory under the Factory and Workshop Act, 1901, s. 97 (1) (a).] from workrooms by the open air or by an intervening ventilated space. (An exemption in this respect is allowed for workrooms, in use before 1903, in which there is such mechanical ventilation as to ensure that air cannot be drawn into the workroom through the closet.) (d) Sufficiently ventilated. (e) Sufficiently lighted. (f) Under cover. (g) Provided with partitions, and (in the case of conveniences for females) proper doors and fastenings. [That is, such doors and fastenings, for each closet, as to secure due privacy. The height of the doors should not be less than 6½ ft.] (h) Provided with separate approaches for men's and women's conveniences; and with proper screening of the interior so as to be invisible from places where persons of the other sex have to pass.

3. Lavatories.

In every factory or workshop where lead, mercury, phosphorus, arsenic, or other poisonous substance is to be used, suitable washing conveniences must be provided for the use of persons employed in any department where such substances are to be used (Factory and Workshop Act, 1901, sec. 75). Many classes of works come within this category (*e.g.* printing works, coach building works, glass works), besides those which are recognised more specially as dangerous, *e.g.*, white lead works, potteries, etc. No standard as to the number or kind of conveniences is prescribed by the Act, but in the case of a number of dangerous trades more precise requirements have been laid down by Regulations, which will serve as a guide to occupiers. These requirements, so far as structural points are concerned, are that the lavatory shall be under cover, and that there shall be either (i) a trough with a smooth impervious surface, fitted with a waste pipe without plug, and of such length as to allow at least two feet for every five persons employed, and having a constant supply of warm water from taps or jets above the trough at intervals of not more than two feet; or (ii) at least one lavatory basin for every five persons fitted with a waste pipe and plug or placed in a trough having a waste pipe, and having either a constant supply of hot and cold or warm water laid on, or (if a constant supply of heated water be not reasonably practicable) a constant supply of cold water laid on and a supply of hot water always at hand when required for use by persons employed.

4. Meal Rooms.

In every factory or workshop where lead, mercury, phosphorus, arsenic or other poisonous substance is used so as to give rise to dust or fumes, suitable provision must be made for persons employed in rooms where such substance is used to take their meals elsewhere in the works (Factory and Workshop Act, 1901, sec. 75). Further provision on the subject is made by Regulations in the case of certain dangerous trades. A well-ventilated and well-lighted room or rooms, with arrangements for heating, etc., and so located as to be free from injurious dust or fumes from any manufacturing process, should be provided for the purpose.

5. General Ventilation.

Every workroom of a factory or workshop must be provided with sufficient means of ventilation (Factory and Workshop Act, 1901, sec. 7). The inlets should be so arranged that direct draughts will not impinge on persons at work. In some industries (*e.g.* cotton, flax, hemp, jute) it is required by Regulations that the arrangements shall be such that no worker shall be exposed to any draught at a temperature of less than 50 degrees F.; this is a point which deserves consideration in planning the ventilation of all workrooms, and particularly those in which sedentary work is to be done. It has often been found that schemes of ventilation have failed for want of due balance between inlets and outlets, or from short-circuiting. Reference may be made to the Reports

issued by the Home Office Committee on Ventilation of Factories and Workshops, 1902 and 1907, which can be obtained from the firms named on the cover.

For certain industries standards of ventilation are prescribed under the Factory Acts; thus, for cotton weaving mills the arrangements must be such that the proportion of carbonic acid in the air shall not in daylight in humidified rooms be more than eight parts per 10,000 in excess of the proportion in the outside air at the time, and in dry rooms eleven parts per 10,000. For flax, hemp, and jute mills the corresponding limit (in both dry and humidified rooms) is five parts per 10,000 (or nine parts absolute).

6. Air Space.

Every room must be of sufficient space (in proportion to the intended number of workers) to prevent overcrowding, and allow at the least for each person employed 250 cub. ft. of air space during ordinary working hours, and 400 cub. ft. during overtime (Factory and Workshop Act, 1901, secs. 1 and 3). In certain industries under Regulations a higher standard is obligatory, either absolutely, *e.g.*, elect accumulator manufacture, 500 cub. ft. of vitreous enamelling of metals or glass, 500 cub. ft.; woollSorting and woolcombing, 1,000 cub. ft. [Any space above 14 ft. from the floor is to be excluded from the calculation.] or as a condition of exception from some statutory requirement.

In the calculation of air space, rooms separated by doors (even if usually open) or by high partitions should be counted separate rooms.

7. Floor Space.

No standard as to this is prescribed under the Factory Acts, but floor space is a bearing upon the general question of overcrowding, and has also to be considered in reference to machinery and other fixtures as well as persons. Crowding of machinery may be a cause of serious danger, and in planning work-rooms for accommodation of machinery it is necessary to take into account the number, size and position of the machines to be fixed, and to allow for the necessary gangways of adequate width. In this connection the position of pillars is often important affecting the possibility of allowing sufficiently wide gangways between or alongside dangerous machines. This question is especially important in textile factories, and as regards self-acting mules certain minimum distances apart are prescribed in sec. 12 of the Factory Act of 1901. In such points the Factory Inspector will be prepared to advise if necessary.

Where electrical apparatus is to be installed, sufficient space (and height) must be allowed to ensure safety and compliance with the Regulations for the Use of Electricity. Thus, in electrical stations, every switchboard passage-way or working platform must (subject to certain exceptions) have a clear height of not less than 7 ft. and a clear width of not less than 3 ft. (between bare conductors), or, if the pressure is to exceed 650 volts, 8 ft. 3 in. and 3 ft. 6 in. respectively. [The Regulations further require that any transformation station must be substantially constructed, provided with proper means of access, properly ventilated, and dry; and further that wherever situated (*e.g.*, under the street) it must be sufficiently large to ensure safety in accordance with the Regulations.]

In cotton cloth factories the average height of humidified rooms must not be less than 14½ ft.

8. Lighting.

Except under Regulations or Special Rules, or as a condition of a special

ception, there is no specific requirement to this in the Factory Acts, but every room in which persons are to be employed should be adequately lighted by natural means, with due provision for artificial lighting also. This is important for various reasons: (a) to prevent eye strain where work requiring close attention has to be done; (b) to minimise risk of accidents from dangerous machinery and from falling dangerous materials; and (c) to lessen the risk of poisoning in drying upon health generally. North light is required for cotton cloth drying, if artificial humidity is employed.

9. Temperature.

Adequate measures must be taken for securing and maintaining a reasonable temperature in each room in which persons are to be employed, and the measures taken must not interfere with the purity of the air (Factory and Workshop Act, 1901, sec. 6).

This necessarily entails consideration of means of warming in rooms where work involving active exertion is to be carried on. For purely sedentary work the temperature should not be below 55 degrees F.; this standard is prescribed as a minimum for certain processes by the Regulations for wool-sorting, flax, hemp, and manufacture, and cotton weaving.

10. Floors.

Except in connection with certain dangerous trades, the only detail as to flooring prescribed in the Factory Acts is the requirement that if any wet process is carried on the floor shall be properly drained (sec. 8, 1901); but fire-proof construction comes into question in connection with floors above, and stability in connection with floors below, and it is obviously desirable that the surface should be sound and even, to facilitate the cleansing which the Acts require.

11. Walls and Ceilings.

Part from the question of fireproof construction (par. 1) the principal consideration arising under the Factory Acts as to walls is that (subject to certain exceptions specified in detail in the Limewashing Order) such surfaces, in factories, have to be periodically limewashed or painted and kept clean.

It is undesirable that workrooms, and especially those in which dusty processes are to be carried on, should have open beams or rafters, projecting ledges, or other surfaces out of reach on which dust may accumulate. In the Report of the Royal Commission on Arsenical Poisoning attention was directed to the public danger arising in this way in many malt kilns: the kilns, containing arsenic condensed from coke fumes, lodged upon such surfaces at intervals fell back into the malt.

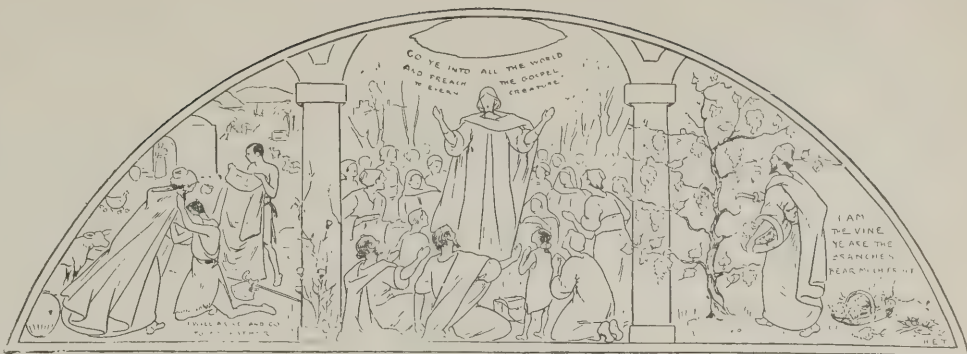
12. Stability of Buildings

Special attention in works where heavy machinery is to be installed (e.g., in mills) or where processes involving excessive vibration are to be carried on (e.g., printing works).

13. Basements.

A room which is underground (i.e., so situated that the surface of the floor is more than 3 ft. below the surface of the way of the adjoining street or of the way of the adjoining or nearest to the room) should not be used as a bakehouse unless so used (Factory and Workshop Act, 1901, sec. 101 (1)).

Basements are, in general, unsuitable for use as workrooms, owing to the difficulty in providing proper lighting and ventilation, and in preventing contamination of the atmosphere by dust and other impurities entering the windows.



SCHOOL-ROOM MURAL DECORATIONS AT BARNET.

During the repainting of the schoolroom at the back of the Wesleyan Church, High Street, Barnet, in the early part of 1911, Mr. H. E. Tidmarsh, who had been in membership with the church for some years, proposed to carry out a certain amount of figure decoration on the walls as a gift.

The original intention grew, till he finally prepared a scheme to cover the whole of the upper walls with Bible subjects, and since then he has spent all the time he could spare from other work in carrying it out. Mr. Tidmarsh's professional work is not ordinarily of this character, as he is much occupied in book illustration and in painting pictures of a topographical character, street work being his choice, as may be inferred from his two London bird's-eye views exhibited in the Royal Academy this year.

The decoration is now completed, and no doubt makes the schoolroom unique, not only in Methodism, but among church buildings of its type. Possibly there is no other schoolroom in England elaborately painted with Bible subjects, and one must go to college chapels to find a comparison.

With regard to the decorations themselves, the following is the method adopted: The groundwork, in grey, is washable distemper (Duresco). A frieze 33 in. wide round the room is devoted to sixteen Bible subjects. The end walls are set out with large lunettes. The effect aimed at is somewhat of the Italian sgraffito (writing in wet plaster). In order to allow the spring cleaner to work over them, the work is carried out in oil paint, with black or brown outline emphasised with high lights and shades. The designs were made on paper, and, when satisfactory, transferred to the wall with chalked paper. There is no attempt to make oil paintings of the subjects, as in the Chapel of the Ascension at the Marble Arch; they are merely mural decoration, in what the

French call "grisaille" and we call "monochrome," and have purposely been kept quiet, so as to make the room beautiful without being obtrusive, and an effort has been made to give them as much teaching value as possible to Sunday-school scholars and others using the room.

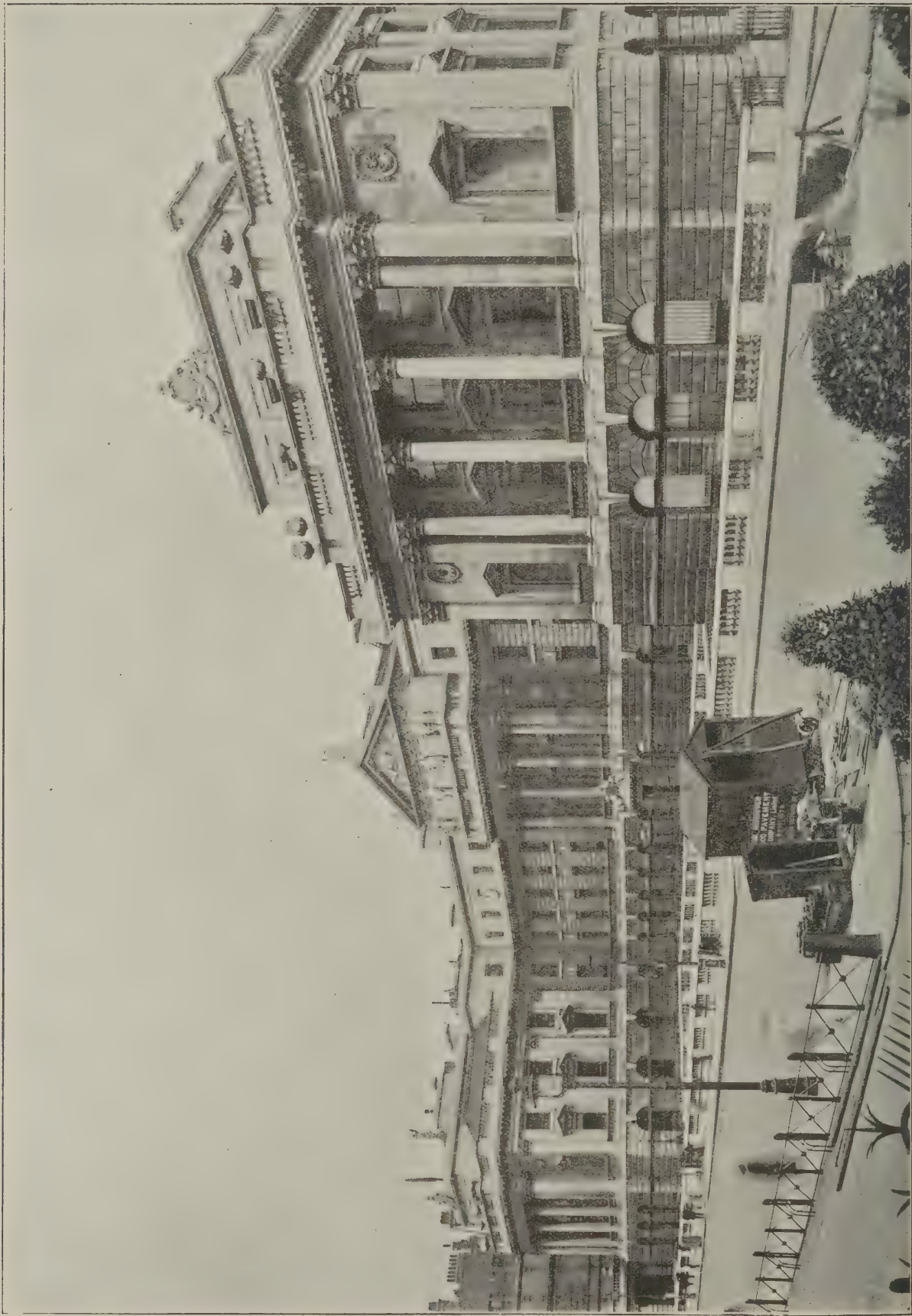
The subjects of the various paintings are as follows. Above the entrance door: Abraham and his household obeying the Divine instruction to get out of his native country into the God-appointed land; Moses before the burning bush; sprinkling the doorposts with blood in Egypt; Moses amongst the astonished gatherers of manna; David fighting Goliath; Elijah's sacrifice on Carmel; Belshazzar's feast and Daniel interpreting the writing; the Nativity; the boy Jesus and the Doctors; John the Baptist and Jesus; Jesus and Nicodemus; Jesus calls His first disciples; feeding the five thousand; the paralysed man forgiven and healed; Jesus carrying His cross, assisted by the Cyrenian; the Resurrection; frieze above the two transepts. Men of the Bible; women of the Bible.

On the end wall opposite the platform there is a large semicircle containing "Christ blessing little children." The odd spaces to the right and left are filled with modern illustrations of the same spirit. To the right is a more modern illustration of the same spirit, with a man and his wife at work in a night school of neglected boys. These two scenes are in brown colour.

The platform wall has another large lunette divided by columns into three spaces. The right division contains the Prodigal Son and the Parable of the Vine; the left, Saul outside Damascus and the Day of Pentecost. The wing space over the left door shows the disobedience of Adam and Eve in the garden. The right-hand wing depicts our Lord overcoming the tempter. The brown colour introduced into the end wall is repeated in this semicircle.

The central subject of all, seen above the speaker's head, is the Ascension fact and message, "Go ye into all the world and preach the Gospel to every creature."



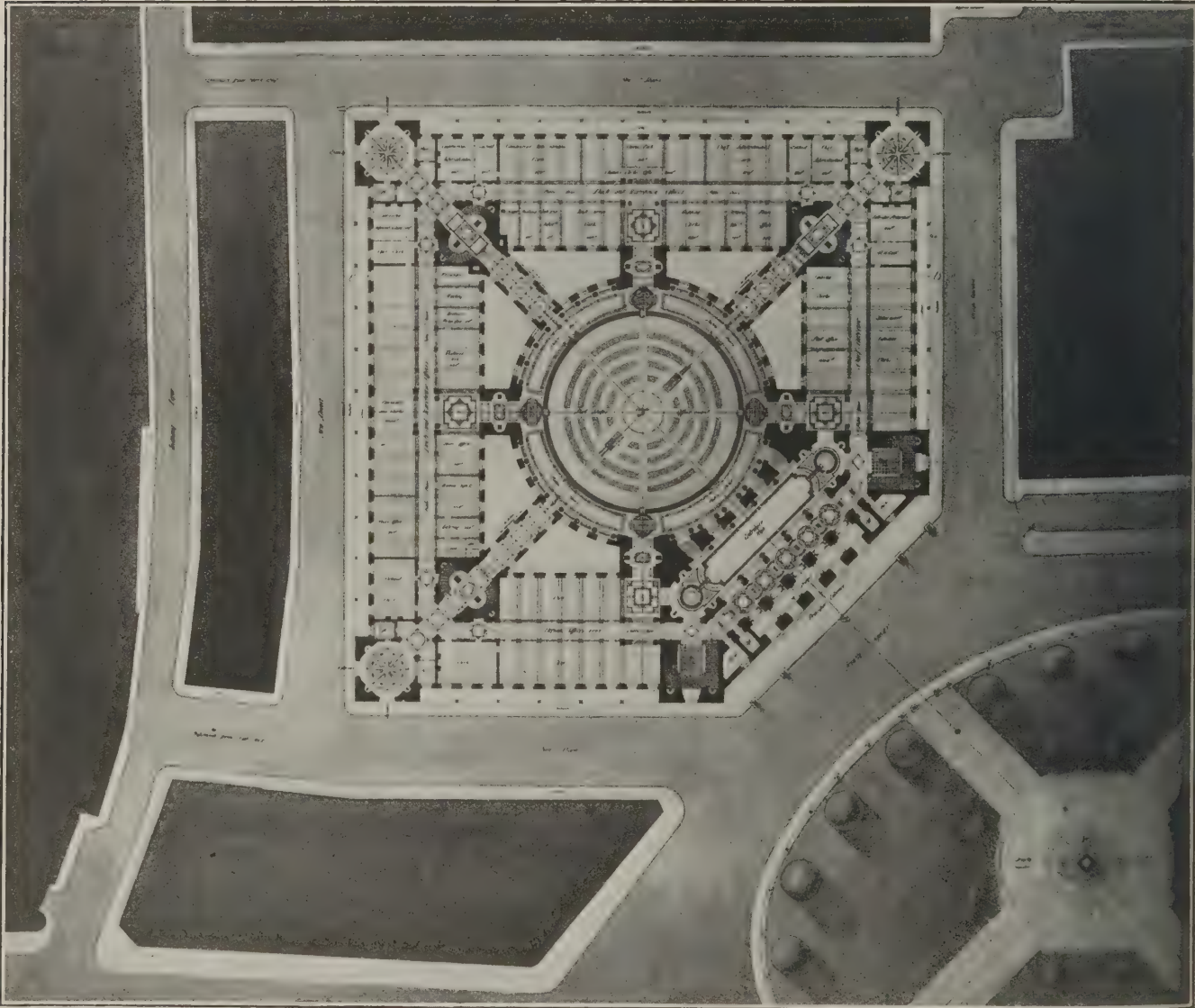


SOMERSET HOUSE: THE WEST FRONT, IN WELLINGTON STREET. SIR JAMES PENNETHORNE, ARCHITECT.

(See also Centrev Plate, and pp. 101, 102.)



ELEVATION.



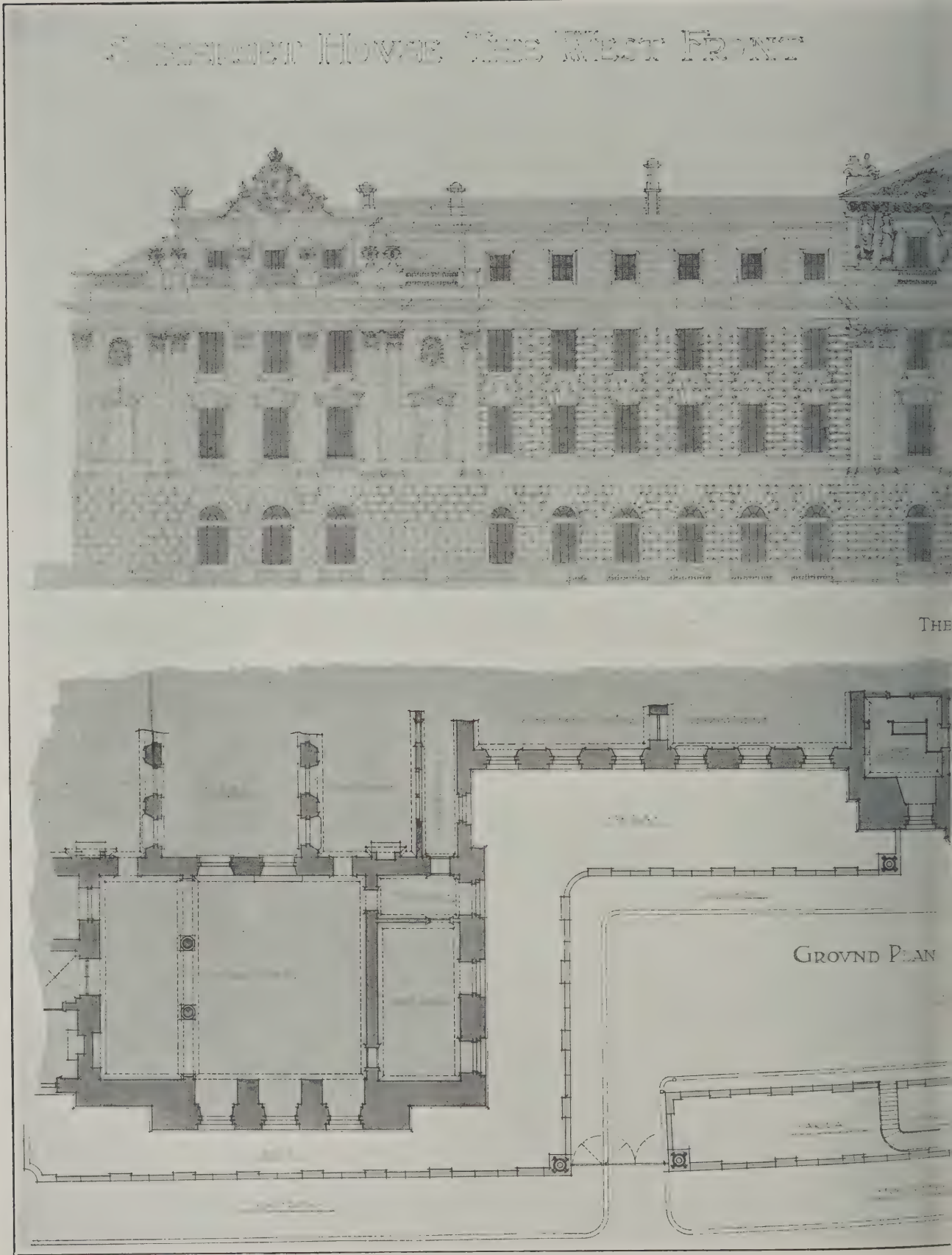
GROUND FLOOR PLAN.

NEW HEAD OFFICES FOR THE PORT OF LONDON AUTHORITY: SELECTED DESIGN.

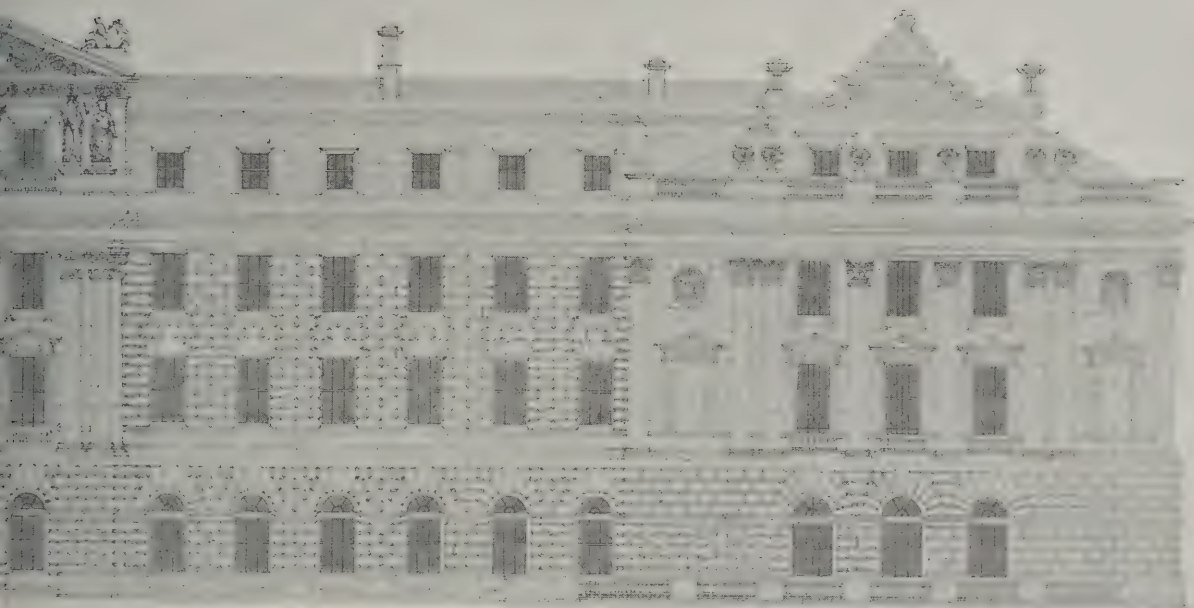
T. EDWIN COOPER, F.R.I.B.A., ARCHITECT.



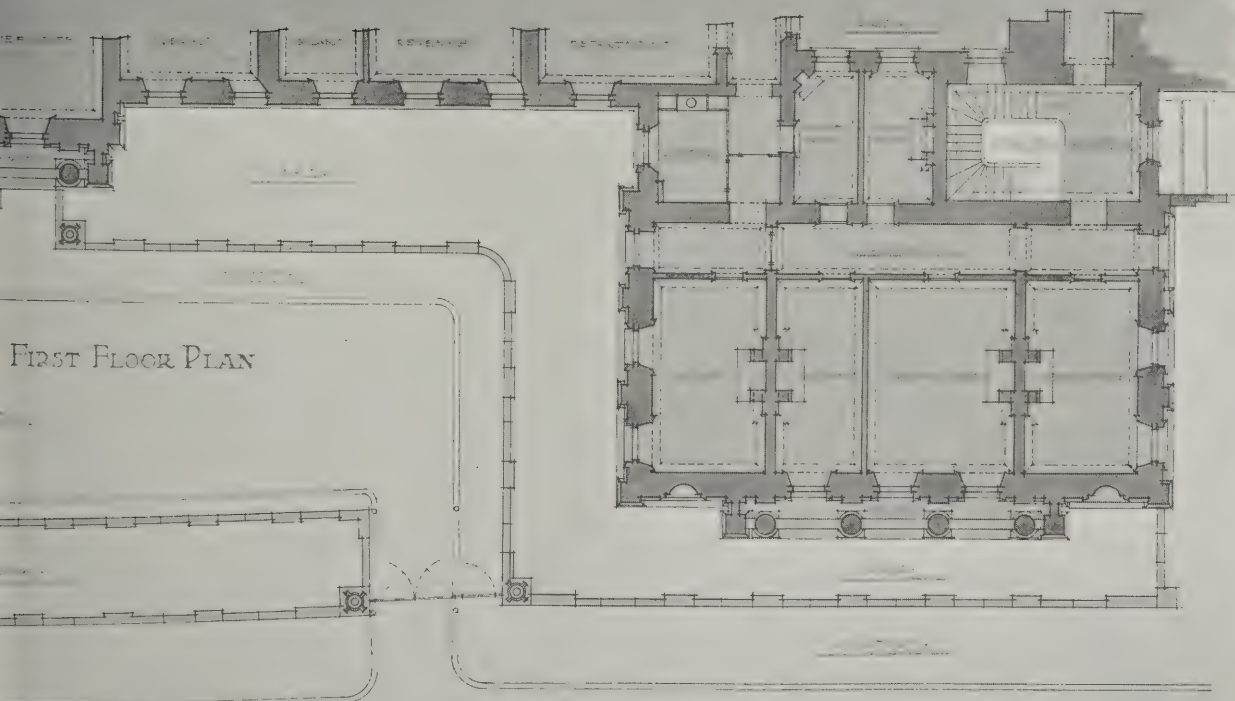
T. EDWIN COOPER, F.R.I.B.A., ARCHITECT.



10 5 0 10 20 30 40 50 FEET



FRONT



ERT A. WELCH, A.R.I.B.A.

OUR PLATE.

Pennethorne's West Front to Somerset House.

The erection of Somerset House from the designs of Sir William Chambers was begun in 1776. The east wing was left unfinished until 1829, when, together with the buildings now occupied by King's College, it was completed from the designs of Sir Robert Smirke. In 1852 the west wing, which faces Wellington Street, the northern approach to Waterloo Bridge, was begun by Mr. James Pennethorne, the architect to the Board of Works, who was subsequently knighted. The west front, which we publish a fine measured drawing by Mr. Herbert A. Welch, A.R.I.B.A., as a centre plate to the present issue, is 100 ft. in extent. The centre portion is unobscured, and consequently cannot be seen from any point of view at the same time with the river front, from which it shows certain variations, the most notable of which is the addition of an attic storey. Most of the details for Pennethorne's front, however, were carefully copied from the earlier work of Sir William Chambers.

So far as we are aware no other measured drawing of this front has hitherto been published. James Pennethorne, who was a nephew of Sir John Nash, was born in 1801. In 1832 he was employed by the Commissioners of Metropolitan Improvements to prepare plans for New Oxford Street, Kensington Palace Gardens, Victoria, Kennington, and Battersea Parks, Chelsea Embankment, and other works. Besides the west wing of Somerset House, he erected in London the Museum of Economic Geology, the Stationery Office, Westminster, the building for the University of London, and he also carried out a number of improvements at Buckingham Palace.

THE CARE OF ECCLESIASTICAL BUILDINGS.

Sir Lewis T. Dibdin, Dean of Arches and First Church Estates Commissioner, in giving evidence before the joint committee of the two houses on the Ancient Monuments Protection Bill, described the present procedure in carrying out alterations to ecclesiastical buildings. Whenever an application was made to the commissioners

for financial assistance, his practice was to ask for plans to see exactly what it was proposed to do, to see that a responsible architect was employed, and, if necessary, to see that a faculty was obtained. He could not remember a single case during the eight years of his experience as Church Estates Commissioner of what could be called an architectural outrage having been committed. A faculty was necessary whenever the fabric was interfered with, and this would include the driving of a hole through the wall for the purpose of a heating apparatus.

The Bishop of Bristol asked the witness whether he would object to the scheduling of ancient churches, and in reply Sir Lewis Dibdin said that if this involved anything like control by the Office of Works or any other body of ecclesiastical buildings, he should regard it as absolutely mischievous, and in existing circumstances wholly impossible. An ancient church could not be regarded entirely from the point of view of an ancient monument. Its primary purpose was for public worship, and neither the Office of Works nor the County Council was a suitable or capable body for dealing with a church from that point of view. Further, to bring in the Office of Works or an advisory board would cut clean across



SOMERSET HOUSE: DETAIL OF WEST FRONT. SIR JAMES PENNETHORNE, ARCHITECT.

(See also Centre Plate, and pp. 96 and 102.)

the whole ecclesiastical organisation in a way that no ecclesiastical administrator could for a moment favour. All ecclesiastical buildings in a diocese were under the control of the Bishop, the Ordinary, and the faculty was merely the Bishop's agency for exercising the control which ecclesiastical law gave him over the building. That was the whole basis of faculties. To substitute for that control the control of the Office of Works would be absolutely destructive and anarchic. One practical result would be to increase the difficulty of raising restoration funds, and there would be a great many more ecclesiastical ruins. In reply to questions, the witness stated emphatically that there was no cathedral in the country which was not under the oversight of a distinguished architect.

Mr. J. W. Willis-Bund, chairman of the Worcestershire County Council, also gave evidence, and, speaking on behalf of the County Councils' Association, suggested that ancient and historical monuments, including ecclesiastical buildings, should be scheduled, and that nothing should be done to them without notice to the Office of Works and the County Council. Some authority might also, he thought, be usefully interposed to prevent the destruction or improper restoration of interesting and historic bridges.

GLOUCESTERSHIRE ARCHITECTURAL ASSOCIATION.

Summer Excursion to Bath.

The summer excursion of the above association was held on Saturday, July 6th, when a party of members visited Bath and the neighbourhood. On arrival at Bath, the party immediately started for Prior Park by motor via the Circus and Crescent. At Prior Park a pleasant hour was spent wandering through the huge deserted buildings, which stand amidst glorious surroundings, overlooking Bath. These buildings are full of architectural interest, and it was with some reluctance that members again took the road. A brief stay was made to view the residence of Mr. Sturge Cotterell, a delightful stone bungalow recently erected from designs by Mr. C. F. A. Voysey. By the courtesy of the owner, members were enabled to inspect the internal arrangements, which present many interesting features. From here a long run through high roads, by-lanes, and eventually bridle paths brought the party to Monk's Park, where one of the large mines belonging to the Bath Stone Firms, Ltd., is situated. Here, 90 ft. below the surface, the extensive workings of the mines were explored, and the methods of quarrying the stone demonstrated and explained to the members. By the hospitality of the Bath Stone Firms, Ltd., lunch was provided underground. Above ground again, the large stocks of quarried stone were inspected, and members picked up much useful information.

Lacock was the next stopping place, and after visiting the Abbey with its beautiful mediæval conventual buildings, and the interesting Transitional work added later when it was converted into a residence, the party explored the village. Lacock contains a wealth of mediæval and early Renaissance work, and a charming church, and it was some time before the party could be re-assembled to resume the journey. The road to South Wraxall, running through delightful country, passes many buildings of architectural interest, but time only allowed a few minutes' stay at

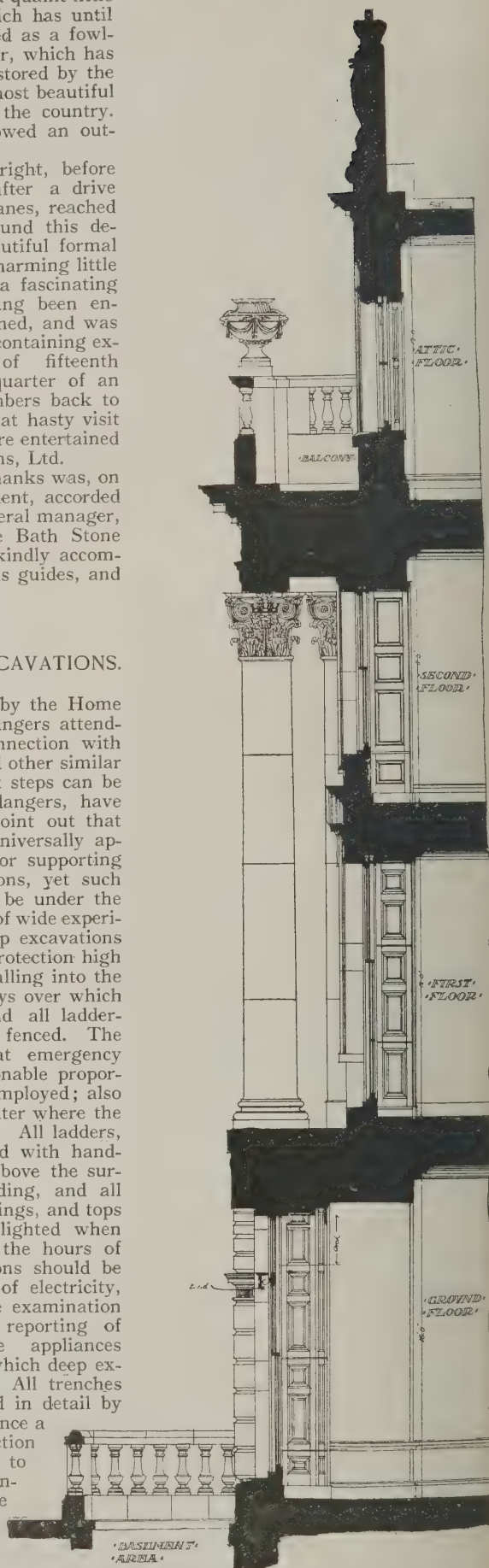
Corsham Almshouses, and at a quaint little wayside pilgrims' chapel, which has until the past few years been used as a fowl-house! South Wraxall Manor, which has been most sympathetically restored by the present owner, is one of the most beautiful mediæval manor houses in the country. Unfortunately time only allowed an outside view.

Turning sharply to the right, before reaching Bath the party, after a drive through steep and tortuous lanes, reached St. Catherine's Court. Round this delightful Tudor house are beautiful formal gardens, and adjoining is a charming little church, the whole making a fascinating picture. The gardens having been enjoyed, the church was examined, and was found to be very interesting, containing extremely good examples of fifteenth century stained-glass. A quarter of an hour's run brought the members back to Bath, where, after a somewhat hasty visit to the Roman baths, they were entertained to tea by the Bath Stone Firms, Ltd.

During the day a vote of thanks was, on the proposition of the President, accorded Mr. Sturge Cotterell, the general manager, and other members of the Bath Stone Firms, Ltd., for having so kindly accompanied the party and acted as guides, and also for their hospitality.

DANGER OF DEEP EXCAVATIONS.

The committee appointed by the Home Office to inquire into the dangers attending deep excavations in connection with the construction of docks and other similar works, and to consider what steps can be taken to minimise such dangers, have issued their report. They point out that although no definite rules universally applicable can be laid down for supporting the sides of deep excavations, yet such trenches should in all cases be under the direct control of some person of wide experience above the ganger. Deep excavations should be surrounded by a protection high enough to prevent persons falling into the excavations, and all gangways over which workmen have to pass, and all ladder-landing platforms, should be fenced. The committee also suggest that emergency ladders be provided in reasonable proportion to the number of men employed; also means of escape from the water where the circumstances demand them. All ladders, they say, should be provided with hand-holds extending 3 ft. 6 in. above the surface of the ground or landing, and all gangways, intermediate landings, and tops of ladders should be well lighted when work is carried on during the hours of darkness. Factory regulations should be enforced regarding the use of electricity, the annealing of chains, the examination of steam boilers, and the reporting of accidents, and ambulance appliances should be kept at works in which deep excavations are in progress. All trenches should be carefully inspected in detail by a competent person at least once a day, and a register of inspection kept, which should be open to examination by the factory inspector. The committee make various suggestions in regard to blasting, and specially recommend that after blasting in timbered excavations all loose material deposited on the struts and horizontal surfaces should be swept down.



SECTION THRO' PROJECTING WINGS.

SOMERSET HOUSE: WELLINGTON STREET FRONT. SIR
JAMES PENNETHORNE, ARCHITECT. MEASURED AND
DRAWN BY HERBERT A. WELCH, A.R.I.B.A.

(See also Centre Plate and pp. 80, 101, 102.)

KNEE-BRACED ROOF TRUSSES.

Effect of Reactions upon Wind Stresses.

BY EWART S. ANDREWS, B.Sc.Eng. (LOND.).
(Concluded from p. 639, June 19th, 1912.)

Case III.

The reactions in this case are considered acting at the bases of the columns, this condition holding if the columns are pinned at their bases. Several authorities on the subject are of the opinion, and tests made upon columns indicate, that the condition of the ends being fixed should only be assumed when the columns are securely embedded for some length, and that in most cases the assumption of pin-jointed ends gives results much nearer the actual strength with ordinarily pinned columns than the assumption of fixed ends. An important article upon this subject will be found in the *Engineering News* (New York) of November 2nd, 1911.

As in Case II., each reaction is taken as resisting equally the horizontal component of the resultant wind force.

The forces acting upon the truss are shown in Fig. 3; the wind force on the left is as before 400 lb., divided up as shown; on the side we have a wind force of $30 \times 17 = 510$ lb., which is divided up

proportionally as shown into 75 lb. at the top, 255 lb. at the junction between the knee-brace and column, and 180 lb. at the base. As these loads will induce bending-moments in the columns, we have, as in the previous case, to adopt some artifice such as assuming additional bracing to exist as indicated in dotted lines. To draw the stress diagram we first set out the wind forces to scale on lines o, 8, 1, 2...7 and join o 7 to get the resultant W; this acts at the intersection of the horizontal and inclined wind forces of 510 to 400 lbs. respectively, and when produced meets the line YZ joining the column bases at the point a_2 . The horizontal component of W is halved between the reactions R_Y and R_Z and the vertical component is divided in the ratio $\frac{a_2 Z}{a_2 Y}$; this may be done graphically

as before by bisecting o 7 in C_1 and drawing a vertical line $b_1 d_1$ to meet o₁ 2 and the horizontal through 7, and then dividing $d_1 b_1$ in X so that

$$\frac{b_1 X}{d_1 X} = \frac{a_2 Z}{a_2 Y}$$

this being done graphically as in Case I. if desired. Starting at the point 8 we then draw the dotted line 8 v parallel to the bar 8 V to meet the vertical through X; then v u parallel to V U and u parallel to I U, their intersection giving the point u; next draw u a parallel to U A and X a parallel to X A to give the point a and so on in the usual manner until the whole stress diagram is completed.

Comparison of Results.

If the stresses are read off from the above three stress diagrams with the usual rule for distinguishing between ties and

struts, the results will be approximately as given by the following table.

Member.	Stresses in pounds.			Member.	Stresses in pounds.		
	Case I.	Case II.	Case III.		Case I.	Case II.	Case III.
1A or UA	+331	+165	-30	O7 or	+16	-30	+50
AX	-170	-300	-425	OS			
AB	-479	-348	-133	OX	+187	+760	-1670
B ₂	+045	+722	+690	PQ	-30	+377	+960
BC	+114	+109	+112	P7	+35	-745	-2010
C ₄	+696	+771	+742	PO			
CD	-332	-415	-585	O7	+35	-745	-2010
DX	-367	-233	-20	ON	+187	+760	+1670
DE	+230	+275	+318	NX	-26	+373	+950
E ₅	+484	+462	+338	MN	-65	-268	-620
EF	-276	-332	-375	M7	+179	-146	-720
FX	-214	-49	+180	ML	+77	+326	+740
G ₆	+264	+292	+330	LX	-67	+194	+580
FG	+365	+303	+160	LK	-42	-180	-420
GH	-294	-330	-370	K7	+224	-55	-270
HJ				KJ	+48	+202	+476
HX	-87	+100	+350	JH			
				JX	-87	+100	+350

+ Indicates compression.
- Indicates tension.

The stresses in corresponding bars on opposite sides of the truss are arranged on the same line, so that the stresses for the wind blowing on the other side can be read off at once; for instance, the stress in DE when the wind blows on the right side will be the same as given in above table for MN.

Conclusion.

A consideration of the above table will show that the stresses are very different in the three cases, and, as this type of truss is often designed, some further standardisation of practice appears to be necessary. If, as we believe, the actual state of things is something between the results of Cases II. and III., then to base a design upon calculations made as in Case I. is practically useless. It does not follow from this statement that trusses based upon the method of Case I. will be unsafe, because experiments have proved that wind pressures over considerable areas practically never came anywhere near as high as are allowed for in most calculations, and also that there exists a suction pressure on the leeward side of the roof which reduces considerably the stresses in the truss. If, however, we are going to base our design upon stress diagrams upon certain assumptions as to the nature of wind pressure, it seems only logical to make the assumption as to reactions which most nearly meet the case. The results of an experimental determination of the stresses in a model knee-braced truss subjected to the above-considered forces would be very interesting; the stresses could be deduced from

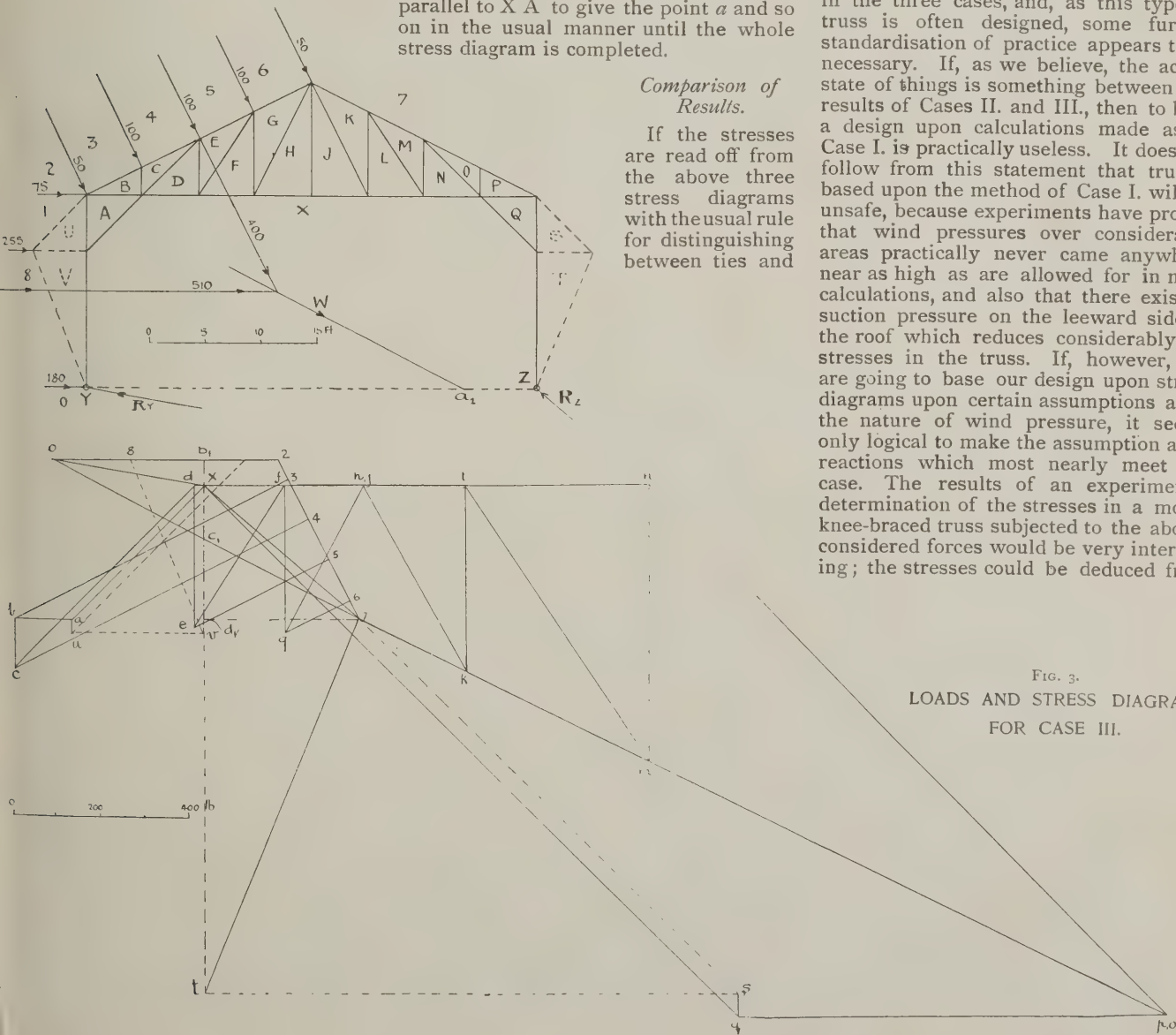


FIG. 3.
LOADS AND STRESS DIAGRAM
FOR CASE III.

measurements of the strains by delicate extensometers.

In conclusion we would like to draw attention to one point with regard to these trusses that designers sometimes omit to consider; we refer to the fact that the columns will be subjected to bending-moments in addition to their central loads, and so should be designed accordingly.

NEW LIGHT ON OLD BUILDING METHODS.

At the rooms of the Society of Antiquaries at Burlington House, some of the results of Professor Garstang's most recent excavations have been recently on view. The exhibition represented the fine work accomplished by the Sudan Excavations Fund—a special committee of the Liverpool Institute of Archæology, supported by representatives of some of the larger museums in this country and on the Continent. Three years ago little was known of Meroë but its name, and the pyramids that loom strangely out of the Sudan deserts, about midway between Atbara and Khartum. These, the tombs of the Ethiopian kings and queens, lent importance to an area of indistinguishable ruins by the Nile that might otherwise have long remained unnoticed, and so led to the discovery and excavation of the historic city.

With regard to this season's results, which the recent exhibition illustrated, the problem of the Roman frontier, a writer in "The Times" points out, is kept alive by the discovery of a small classical temple, of a torso, possibly of Augustus himself, and by smaller but archæologically equally significant indications like fragments of pottery in the Roman style, bearing in some cases potters' marks in Roman character. A great building seems to represent a separate official "palace" of these times. It remains for further excavation to show whether the traces of Roman handiwork are indications of settlement or of actual military occupation.

The last discovery of all is one which has thrown a flood of light upon one period in the history of Meroë. About the third century B.C. a marked change in the local arts began. Egyptian ideas were supplanted by Greek; and this phase is strikingly illustrated by the Royal baths which have been located and partially uncovered. The building was designed with an Oriental idea of luxury; it was freely adorned with colonnades, frescoes, and statues; among its chambers were an elaborate tepidarium and a combined shower and swimming bath in place of the regular frigidarium. The sculptures on exhibition were an illustration of the underlying motive in the art of the period; they may be appropriately styled barbaro-classic. They are sincerely based upon classical models (even including a Venus and a Satyr), and the work is executed with a certain freedom and realism; only it lacks skill and proper appreciation of classical form and beauty.

Public Offices (Sites) Bill.

This Bill, which confers on the Office of Works the necessary powers to acquire land for the erection of public offices in the neighbourhood of Westminster, passed through Committee in the House of Commons on Tuesday, July 9. It was afterwards read a third time.

U.S.A. GOVERNMENT STANDARD SPECIFICATIONS FOR PORTLAND CEMENT.

The Standard Specifications for Portland Cement that have been adopted by the United States Government will afford an interesting re-survey of the subject, as well as a means of comparison with the standards and practices in use in our own country.

IN June, 1911, the Secretary of the United States Department of Commerce and Labour arranged, through the Secretaries of the various departments, for a conference of Government engineers for the purpose of unifying the specifications for Portland cement used by the United States Government. At this conference a committee was appointed to consider existing specifications and to recommend a single specification for Portland cement to be used by all departments of the Government.

After an extended series of meetings of this committee, at which careful consideration was given to representative specifications for Portland cement, as well as to all available data on methods of tests, a tentative specification was developed, which was reported to the departmental conference at a general meeting held July 20th, 1911.

In view of the desirability of agreement between the specifications in use by the public and those adopted by the Government, the committee was instructed by the conference to confer with representative consumers and manufacturers as well as the special committees of the national engineering societies more directly interested in the subject of cement specifications. As a result the tentative specifications first reported by the departmental committee were modified slightly, until substantial agreement was reached on practically all points except the methods of determining the normal consistency and time of setting, and the following specifications were unanimously adopted by the departmental conference at the meeting held February 13th, 1912.

It was recognised that no specification can be considered final, but must be subject to revision from time to time as occasion requires, and provision will be made for such revision by the various Government departments, all of which have adopted the specification as recommended by the conference.

Definition.—1. The cement shall be the product obtained by finely pulverising clinker produced by calcining to incipient fusion, an intimate mixture of properly proportioned argillaceous and calcareous substances, with only such additions subsequent to calcining as may be necessary to control certain properties. Such additions shall not exceed 3 per cent. by weight, of the calcined product.

Composition.—2. In the finished cement, the following limits shall not be exceeded:—

	Per cent.
Loss on ignition for 15 minutes	4
Insoluble residue	1
Sulphuric anhydride (SO ₃)	1.75
Magnesia (MgO)	4

Specific Gravity.—3. The specific gravity of the cement shall be not less than 3.10. Should the cement as received fall below this requirement, a second test may be made upon a sample heated for thirty minutes at a very dull red heat.

Fineness.—4. Ninety-two per cent. of the cement, by weight, shall pass through the No. 100 sieve, and 75 per cent. shall pass through the No. 200 sieve.

Soundness.—5. Pats of neat cement prepared and treated as hereinafter prescribed shall remain firm and hard and show no sign of distortion, checking, cracking, or disintegrating. If the cement fails to meet the prescribed steaming test, the cement may be rejected or the steaming test repeated after seven or more days at the option of the engineer.

Time of Setting.—6. The cement shall not acquire its initial set in less than forty-five minutes, and must have acquired its final set within ten hours.

Tensile Strength.—7. Briquettes made of neat cement, after being kept in moist air for twenty-four hours and the rest of the time in water, shall develop tensile strength per square inch as follows:—

After 7 days	500
After 28 days	600

8. Briquettes made up of one part cement and three parts standard Ottawa sand, by weight, shall develop tensile strength per square inch as follows:—

After 7 days	200
After 28 days	275

9. The average of the tensile strengths developed at each age by the briquettes in any set made from one sample is to be considered the strength of the sample at that age, excluding any results that are manifestly faulty.

10. The average strength of the sand mortar briquettes at twenty-eight days shall show an increase over the average strength at seven days.

Brand.—11. Bids for furnishing cement or for doing work in which cement is to be used shall state the brand of cement proposed to be furnished and the mill at which made. The right is reserved to reject any cement which has not established itself as a high-grade Portland cement, and has not been made by the same mill for two years and given satisfaction in use for at least one year under climatic and other conditions at least equal in severity to those of the work proposed.

Packages.—12. The cement shall be delivered in sacks, barrels, or other suitable packages (to be specified by the engineer), and shall be dry and free from lumps. Each package shall be plainly labelled with the name of the brand and of the manufacturer.

13. A sack of cement shall contain 94 lb. net. A barrel shall contain 376 lb. net. Any package that is short weight or broken or that contains damaged cement may be rejected, or accepted as a fractional package, at the option of the engineer.

Inspection.—14. The cement shall be tested in accordance with the standard methods hereinafter prescribed. In general the cement will be inspected and tested after delivery, but partial or complete inspection at the mill may be called for in the specifications or contract. Tests may be made to determine the chemical composition, specific gravity, fineness, soundness, time of setting, and tensile strength and a cement may be rejected in case it fails to meet any of the specified requirements. An agent of the contractor may be present at the making of the tests, or they may be repeated in his presence.

. In case of the failure of any of the, and if the contractor so desires, the near may, if he deem it to the interest the United States, have any or all of tests made or repeated by the Bureau standards, United States Department Commerce and Labour, in the manner in after specified, all expenses of such to be paid by the contractor. All tests shall be made on samples ished by the engineer.

Standard Methods of Testing.

Sampling.—16. The selection of the es for testing will be left to the en-er. The number of packages sampled the quantity to be taken from each age will depend on the importance of work, the number of tests to be made, the facilities for making them.

The samples should be so taken as present fairly the material, and, where tions permit, at least one barrel in y fifty should be sampled. Before are made samples shall be passed h a sieve having twenty meshes per r inch to remove foreign material. es shall be tested separately for ical qualities, but for chemical analy-ized samples may be used. Every le should be tested for soundness, but mber of tests for other qualities will ft to the discretion of the engineer.

Chemical Analysis.—18. The method to allowed for the analysis of cement be that proposed by the Committee niformity in the Analysis of Materials the Portland Cement Industry, red in the Journal of the Society for nical Industry, volume 21, page 12, , and published in Engineering s, volume 50, page 60, 1903, and in Engineering Record, volume 48, page 993.

The insoluble residue shall be deter-nd on a 1-gram sample, which is ted on the steam bath in hydrochloric of approximately 1.035 specific gravity the cement is dissolved. The residue itered, washed with hot water, and lter-paper contents digested on the n bath in a 5 per cent. solution of m carbonate. The residue is then ed, washed with hot water, then with hydrochloric acid, approximately of specific gravity, and finally with hot r, then ignited and weighed. The ity so obtained is the insoluble e.

Determination of Specific Gravity.— he determination of specific gravity be made with a standardised appa- of Le Chatelier or other equally ate form. Benzine (62 degrees é naphtha), or kerosene free from , should be used in making the den-ation. The cement should be ed to pass slowly into the liquid of olumenomotor, taking care that the r does not adhere to the sides of the ated tubes above the liquid and that unnel through which it is introduced ot touch the liquid. The tempera- of the liquid in the flask should not ore than 1 degree F. during the tion. To this end the flask should be rsed in water. The results of red tests should agree with 0.01.

If the specific gravity of the cement eived is less than 3.10, a redetermina- may be made as follows:—

enty grams of the cement is placed in el or platinum crucible about 2 in. in eter and heated for thirty minutes at perature between 419 degrees C. and eegrees C. After the cement has

cooled to atmospheric temperature the specific gravity shall be determined in the same manner as described above. The cement should be heated in a muffle or other suitable furnace, the temperature of which is to be maintained above the melt- ing point of zinc (419 degrees C.) but e- low the melting point of antimony (630 degrees C.). The maximum temperature can be recognised as a very dull red which is just discernible in the dark.

Determination of Fineness.—22. The No. 100 and No. 200 sieves shall conform to the standard sieve specifications of the Bureau of Standards, Department of Commerce and Labour.

23. The determination of fineness should be made on a 50-gram sample which may be dried at a temperature of 100 degrees C. (212 degrees F.) prior to sifting. The coarsely screened sample should be weighed and placed on the No. 200 sieve, which, with the pan and cover attached, should be held in one hand in a slightly inclined position and moved forward and backward in the plane of inclination, at the same time striking the side gently about 200 times per minute against the palm of the other hand on the upstroke. The operation is to be continued until not more than 0.05 gram will pass through in one minute. The residue should be weighed, then placed on the No. 100 sieve, and the operation repeated. The sieves should be thoroughly dry and clean. De-termination of fineness may be made by washing the cement through the sieve or by a mechanical sifting device which has been previously standardised with the re- sults obtained by hand sifting on equiva- lent samples. In case of the failure of the cement to pass the fineness requirements by the washing method or the mechanical device, it shall be tested by hand.

Mixing Cement Pastes and Mortars.— 24. The quantity of cement or cement and sand to be used in the paste or mortar should be expressed in grams and the quantity of water in cubic centimeters. The material should be weighed, placed upon a non-absorbent surface, thoroughly mixed dry if sand be used, and a crater formed in the centre, into which the proper percentage of clean water should be poured; the material on the outer edge should be turned into the crater by the aid of a trowel. As soon as the water has been absorbed, the operation should be completed by vigorously mixing with the hands for one minute and a half. During the operation of mixing, the hands should be protected by rubber gloves. The tem- perature of the room and the mixing water should be maintained as nearly as practicable at 21 degrees C. (70 degrees F.).

Determination of Normal Consistency.—25. The normal consistency for neat paste to be used in making briquettes and pats should be determined by the ball method, as follows:—

26. A quantity of cement paste should be mixed in the manner above described under Mixing Cement Pastes and Mortars, and quickly formed into a ball above 2 in. in diameter. The ball should then be dropped upon a hard, smooth, and flat surface from a height of 2 ft. The paste is of normal consistency when the ball does not crack and does not flatten more than one-half of its original diameter.

27. Trial pastes should be made with varying percentages of water until the cor- rect consistency is obtained.

28. The percentage of water to be used in mixing mortars for sand briquettes is

given by the formula:—

$$y = \frac{2}{3} \frac{P}{n \times 1} \times K$$

in which y is the percentage of water re- quired for the sand mortar, P is the per- centage of water required for neat cement paste of normal consistency, n is the number of parts of sand to one of cement by weight, and K is a constant which for standard Ottawa sand has the value 6.5.

The percentage of water to be used for mortars containing three parts standard Ottawa sand, by weight, to one of cement is indicated in the following statement:—

Percentage of water for neat cement paste.	Percentage of water for 1 to 3 mortars of stan- dard Ottawa sand.
18	9.5
19	9.7
20	9.8
21	10.0
22	10.2
23	10.3
24	10.5
25	10.7
26	10.8
27	11.0
28	11.2
29	11.3

Determination of Soundness.—29. Pats of neat cement paste of normal consistency about 3 in. in diameter, $\frac{1}{2}$ in. in thickness at the centre, and tapering to a thin edge, should be kept in moist air for a period of twenty-four hours. One pat should then be kept in air and a second in water, at the ordinary temperature of the laboratory not to vary greatly from 21 degrees C. (70 degrees F.), and both observed at in- tervals for at least twenty-eight days. A third pat should be exposed to steam at atmospheric pressure above boiling water for five hours.

Determination of Time of Setting.—30. The time of setting should be determined by the standardised Gillmore needles, as follows: A pat of neat cement paste about 3 in. in diameter and $\frac{1}{2}$ in. in thickness with flat top, mixed at normal consistency should be kept in moist air, at a tempera- ture maintained as nearly as practicable at 21 degrees C. (70 degrees F.). The cement is considered to have acquired its initial set when the pat will bear, without appreciable indentation, a needle one- twelfth of an inch in diameter loaded to weigh one-fourth of a pound. The final set has been acquired when the pat will bear, without appreciable indentation; a needle one twenty-fourth of an inch in diameter, loaded to weigh 1 lb. In making the test the needle should be held in a vertical position and applied lightly to the surface of the pat. The pats made for the soundness test may be used to deter- mine the time of setting.

Tensile Tests.—31. Tensile tests should be made on an approved machine. The test pieces shall be briquettes of the form recommended by the Committee on Uni- form Tests of Cement of the American Society of Civil Engineers, and illustrated in Circular 33 of the Bureau of Standards. The briquettes shall be made of paste or mortar of normal consistency. Imme- diately after mixing, the paste or mortar should be placed in the moulds, pressed in firmly by the fingers and smoothed off with a trowel without mechanical ram- ming. The material should be heaped above the mold, and in smoothing off, the trowel should be drawn over the mold in such a manner as to exert a moderate pressure on the material. The molds should be turned over and the operation of heaping and smoothing off repeated. Not less than three briquettes should be

made and tested for each sample for each period of test. The neat tests are not considered so important as the sand tests. The briquettes should be broken as soon as they are removed from the water. The load should be applied at the rate of 600 lb. per minute.

Storage of Test Pieces.—32. During the first twenty-four hours after moulding the test pieces should be kept in air sufficiently moist to prevent them from drying. After twenty-four hours in moist air the test pieces should be immersed in water. The air and water should be maintained as nearly as practicable at 21 degrees C. (70 degrees F.).

Standard Sand.—33. The sand to be used shall be natural sand from Ottawa, III., screened to pass a No. 20 sieve and retained on a No. 30 sieve.

34. Sand having passed the No. 20 sieve shall be considered standard when not more than 2 grams pass the No. 30 sieve after one minute continuous sifting of a 200-gram sample.

35. The No. 20 and No. 30 sieves shall conform to the standard sieve specifications of the Bureau of Standards, Department of Commerce and Labour.

Further features of this important publication will be dealt with in later issues.

THE MONUMENTAL BUILDINGS OF MONMOUTH.

At the three days' summer meeting of the Bristol and Gloucestershire Archaeological Society, the first day was mainly devoted to a visit to Monmouth and an inspection of the ruins of Raglan Castle, some eight miles from the town. The Castle, which has been converted into barracks, has little left of the original, and the only remaining parts are one end and two sides of the hall. The party proceeded to view the remains of the Benedictine Priory, which included a fine projecting window, said to have been used by Geoffrey of Monmouth, the monk and chronicler. St. Mary's Parish Church, with its spire rising 200 ft., was next visited. In the afternoon the party visited Raglan, prior to which they were interested in the Shire Hall. The Roman gateway over the river Monnow attracted special attention, and afterwards the church of St. Thomas, the oldest ecclesiastical building in the locality, was seen, with its Norman arch at the entrance of the chancel, 800 years old; and Raglan Castle, a famous old fortress, was also visited.

THE SIMPLEX MILLED CONTACT NIPPLE.

It was first considered necessary to provide for the electrical continuity and earthing of conduits some eight years ago, and in order to avoid the somewhat expensive method of the screwed junction, with its stout gauge tube, several means have been devised of rendering ordinary unscrewed tube electrically continuous. Of these various methods, one of the first was the Simplex grip nipple, which has now been successfully employed upon many hundreds of installations. Hitherto it has been the practice to cut these nipples out of a solid hexagon steel bar, but a modified form of nipple is now being introduced in which the hexagon head is substituted by a milled head, the result being a considerable reduction in cost. Messrs. Simplex Conduits, Ltd., list this nipple, of which we reproduce a small illustration, at ap-

proximately half the price that was formerly charged for the hexagon type. A supplementary list (T 2-448) has been



issued giving full particulars of the "grip" continuity system, together with a table of prices.

GASPARY'S HYDRAULIC BLOCK- MAKING MACHINE.

The reliability and simplicity of the hydraulic press has greatly contributed to its adoption for the manufacture of cement, terrazzo, and granitoid blocks or slabs. While at first slide-table presses were almost exclusively used for the manufacture of the smaller slabs, and hydraulic presses with rotating pressing tables for making granitoid slabs, the hydraulic press with semi-circular guide rails for mould boxes, placed on the market by Dr. Gaspari and Co., Markranstaedt, near Leipzig, has lately been successfully used for both. The semicircular guide-rail arrangement, as illustrated, of which the firm just mentioned are the patentees, consists of a straight part passing between the upper and lower cross-beam, and of a pair of curved rails running round the press in a semicircle. The shunting of the mould-boxes from the straight to the curved part at both ends is effected by means of two rotary rails, which, by their own weight, form a permanent connection with that side from which the mould-boxes travel. Accurate adjustment of the rotary parts to the fixed rails is carefully provided for, and ball-bearings render all the motions smooth and easy. "Safety-snaps" arrest the mould-boxes in the position in which they are required for the various stages of production. The mould-boxes themselves run smoothly, being also fitted with ball bearings.

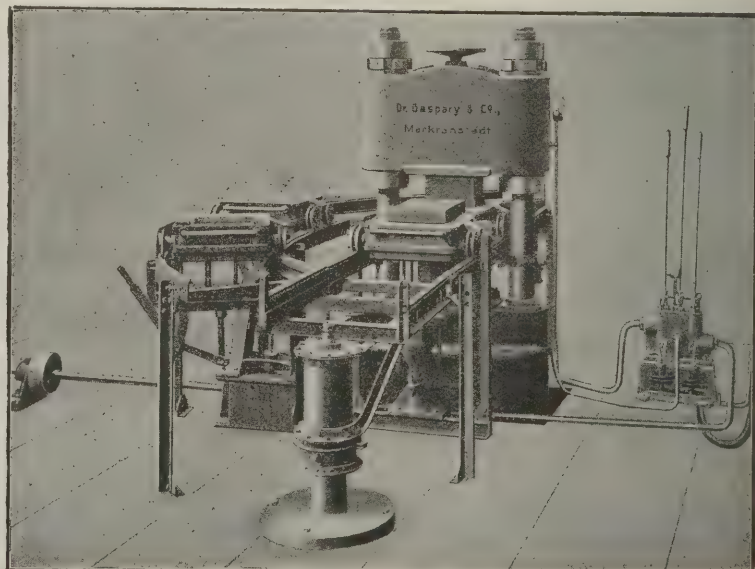
The operation of the machine is as follows: The first man cleans the mould-box used and inserts the oiled matrix, or, instead of oiling it, he places a piece of paper upon it. He now passes on the mould-box to the second workman, who fills in the front and back layer for the plate, and who

partly shakes the material into place. This having been done, the third man takes hold of the mould-box, the material in which has been neatly evened off, and by pushing it on the turning rails, gets it on to the straight run, where it is placed underneath the pressing head. The fourth man, who is attending the reversing device, now comes into action. By moving the lever of the reversing device, he brings the pressure of the water up to the desired number of atmospheres, which he reads off on the manometer. A second movement of the lever sends the water back and thus releases the mould-box. The fifth man seizes the mould-box, and draws it over the hydraulic ejecting device. When the water pressure is forcing the plate through the box, the latter is held fast by two locks. The workman takes the finished plate and carries it away. Ejection of the first and pressing of the following plate are effected simultaneously. The first man then moves the empty mould-box, using the rotary rails, to the place where the matrices are inserted, and the whole process is repeated.

Experience has shown that, following the inventor's directions, and without over-taxing the workmen, 750 granitoid plates, 350 by 350 mm., can be manufactured in ten working hours. Two cement or terrazzo plates 200 by 200 mm. are manufactured at one time in a suitable mould-box, which brings the daily output of such plates to 1,500. Besides square plates, also mitre-shaped plates, base or cornice tiles, figured wall borders, and others can be manufactured in corresponding mould-boxes.

In consideration of the high pressure used, the press is strongly constructed and a distinguishing feature is a pressing socket which can be lifted out, and which contains the pressing cylinder with the packings. A change of packings, if necessary, is quickly performed by lifting out the pressing socket. The pressure stamp can also be exchanged without difficulty owing to its being connected to a spindle rod, which is actuated by a hand-wheel. The mould-boxes run securely on the rails and are provided with exchangeable steel liners. The shaking device is actuated mechanically by means of a cam shaft.

We understand that the firm will gladly supply further particulars regarding the press and of all their machines and moulds for the manufacture of plastic materials.



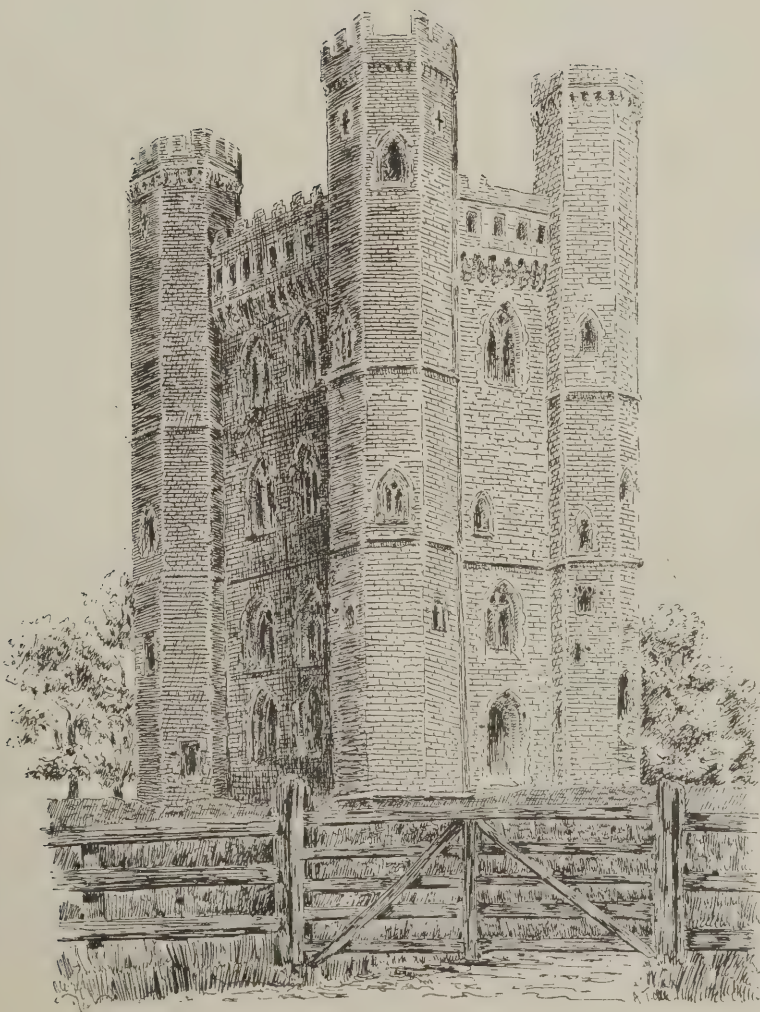
GASPARY'S HYDRAULIC BLOCK-MAKING MACHINE.

THE ARCHITECTS' & BUILDERS' JOURNAL.

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No. 915.



TATTERSHALL CASTLE.

(From "Military Architecture in England During the Middle Ages."—See page 103.)



This James Stuart, F.R.S., F.S.A., with Nicholas Revett, produced, in 1762, that extraordinarily influential work "The Antiquities of Athens," and thus opened the way to the Greek Revival; and if the date assigned to this house—1763-5—is correct, it must have been one of his earliest commissions. The house has a frontage of about 43 ft. The four Greek Ionic pillars, carrying an entablature and a triangular pediment, are attached to the wall. Inside are some delicately carved chimneypieces ascribed to Flaxman.

LICHFIELD HOUSE, No. 15, ST. JAMES'S SQUARE, LONDON. JAMES STUART, ARCHITECT.

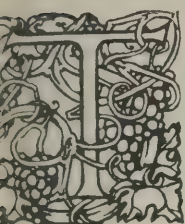
THE ARCHITECTS' & BUILDERS' JOURNAL.

JULY 31st, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 915.

The Architecture of English Castles.



THE building of castles in the Middle Ages was, of course, primarily and in the eyes of the builders, a matter of military engineering. The object was to render them as difficult to assault as possible; to construct them so as to give every advantage possible to the defenders and place every possible difficulty in the way of the attacking party. But the result was to produce many buildings of overpowering architectural grandeur which in picturesque effect may vie with the cathedrals; just as in Roman times the necessity of providing aqueducts for the conveyance of water led to the erection of some of the most striking monuments of human building, though they were undertaken merely as what would now be called engineering work. And there was this additional interest about the mediæval castles, that they were also habitations to accommodate the family of the owner and a large train of servants and fighting men; they were at once both fortresses and residences.

The history of the development of this class of building is, therefore, quite worth the long and interesting treatise which Mr. Hamilton Thompson* has devoted to it, and which is the best general book on the subject since Clark's celebrated work, published somewhere about the middle of last century. There is Viollet-le-Duc's "Military Architecture of the Middle Ages," too, of which the English edition was published in 1860, and which is a splendid reading and illustration (we fancy Mr. Thompson is indebted to it for some of the illustrations in his book); but he is somewhat too imaginative, and is prone, like many French architectural writers, to treat his imaginations as facts. Clark went more into the detail of each particular castle, devoting a chapter to each example; Mr. Thompson's is a general history, dealing with the subject in relation to the state of the country and the modes of warfare at different periods, a treatment which, of course, renders it more interesting in a literary sense.

It is rather a curious consideration that in the history of fortifications we begin and end with earthwork. In modern times, to modify a well-known line,

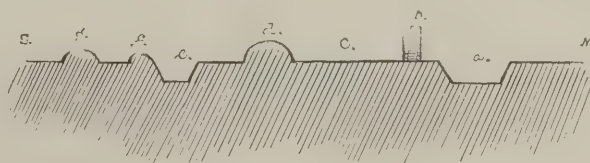
Stone walls do not a castle make,

the modern artillery would very soon unmake it. Stone walls and towers came into England with the Romans, and stone castles not till after the Norman conquest; the British castles consisted of earthworks, not because those days they were better than stone walls, but because it was the best they could then do. The great endeavour then was to mask the entrances, as is specially shown in the plan of Maiden Castle in Dorsetshire, where the concentric rings of earth mounds form a kind of labyrinth by which an attacking party might be lured into a *cul-de-sac* where they could be effectively

slaughtered. The same kind of strategy seems to have generally ruled the laying out of these British camps, though none are so elaborate in their defences as Maiden Castle, to which a special interest attaches just now, as it and the land on which it stands are for sale. It is fortunate that this is a kind of historic relic which cannot, at all events, be transported to America; whoever buys it must take it as it stands, and it is to be hoped that it will be religiously preserved. Maiden Castle and other British fortifications of the same class were no doubt permanent abodes of a tribe that stood in fear of its neighbours, not mere forts. In the country round it is always spoken of as "the Roman camp," an absurd mistake, even to be found in some guide-books; a Roman camp (of which a good example is given on page 13 of the book) was always a carefully laid-out parallelogram, not an irregular enclosure. The Roman wall from the Tyne to the Solway Firth is a very scientific frontier against northern aggression, with a built wall with towers at regular intervals, and a ditch on the northern side, and on the southern side a wide military road, also defended by a ditch and two banks. And along all this road, probably, ran the straggling habitations and the uproarious life which Mr. Kipling has reproduced for us in his remarkable study, "On the Great Wall."

The essential features in the first Norman castles in England, as in those previously erected in Normandy, were the *mount*, with a ditch round it, and the *bailey*, the space around it enclosed by a wall. The mount was often an artificially raised mound, and if there was a tower erected on it, it would have been of timber, since the artificially made mound would not have carried the weight of a stone tower. Mr. Thompson suggests that in the earlier years after the conquest even the forts erected by the Normans had only timber defences. "Stone donjons or keeps were certainly exceptional in England before the reign of Henry II., though there are a few important examples of an earlier date. It cannot be disputed, however, that a certain number of castles were provided with a stone curtain wall and other stone buildings not long after the Conquest. Curtain walls thus built would follow the line of the earthen bank surrounding the bailey, and take the place of the timber stockade." The expression "curtain-wall" has a connection with "court"; in French it was "courtine"—the wall enclosing the courtyard. In the more modern fortification system of Vauban it took rather a different signification, as the straight piece of wall between two towers.

The essential character of the castle, once stone building had been fairly adopted, was the same as the earlier



SECTION OF ROMAN WALL.

(From "Military Architecture during the Middle Ages.")

* "Military Architecture in England during the Middle Ages." By A. Hamilton Thompson, M.A., F.S.A. Henry Frowde, Oxford University Press, 1912; 7s. 6d.

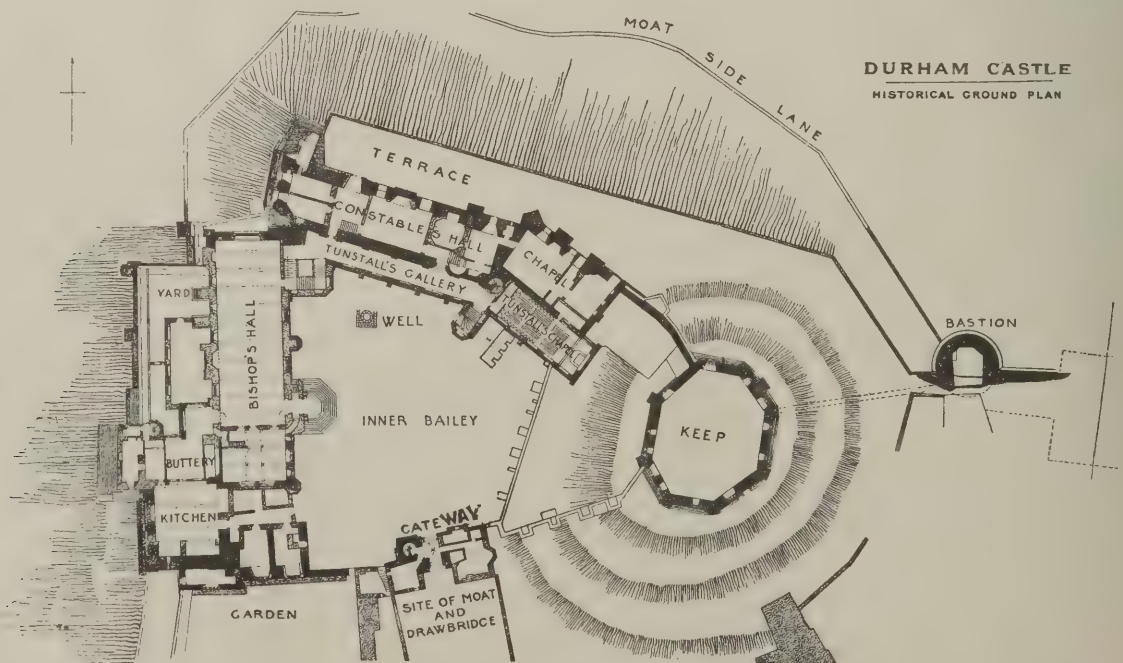
one; it was a castle within a castle, a tower which dominated the courtyard and was a last point of defence if the bailey had been taken. The word "keep," the author points out, though now habitually applied to the inner tower, was not a mediæval designation; the tower was called the "donjon," a word again misapplied in modern use, to mean an underground vault used as a prison; whereas the word was a French corruption of the mediæval Latin word *dunio*, meaning a strong place, and was applied to the whole tower.

The donjon appears to have been in some cases intended from the first as a residence as well as a fortress; at Rochester, for instance, it is obviously so intended; in other cases it would seem that the centre of the residential life was in the hall erected in the bailey and its dependencies. It is when the stone castle has somewhat advanced in character that it begins to become architecturally interesting. The great nearly flat-walled towers of Rochester and Hedingham are impressive enough from their mere mass; but the castle became more architecturally interesting at the period when the donjon began to be of less importance. There was first, however, the discovery that the donjon might be stronger in other forms than square. The circular donjon came into use in the later castles, as at Pembroke; and a massive circular tower, if well built, is always an impressive object. Then there were such experiments as that at Conisbrough, where the donjon is circular in plan, with six immense buttress towers projecting from it, within one of which an oratory is formed, and within another the more prosaic provision of the garde-robe, with a crooked passage leading to it, by way of securing a certain degree of privacy of approach. These sanitary arrangements were of the most primitive kind, there being usually a narrow well or flue in the wall, descending to the ground level; whether any provision was made for clearing out these receptacles seems doubtful. Manorbier Castle, with its very extensive residential plan, is full of them; one can imagine what the result must have been on the air of the interior.

But with gradual improvement of the means of battering at walls, for a rude sort of cannon was coming into use in the fourteenth century, it became a policy to depend less on the ultimate refuge of the donjon and more on keeping the adversary out of the outer enclosure. And here came in the necessity for projecting towers, which would enable the defenders to command the whole surface of the walls between them. And for the same reason it was thought necessary to have heavy flanking

towers to the gateways, projecting far beyond the actual gate, so that no one could attack the gate without putting themselves between two fires. It is to this purely military consideration that we owe the impressive effect of the projecting round towers of so many city and castle gateways. These, built not for effect but for military security, are among the most picturesque pieces of mediæval building in existence. In the end, as at both Carnarvon and Conway, the donjon was dispensed with altogether; the castle became a vast enclosure well defended by the circular or octagonal towers, which projected beyond the wall line and defended the intermediate spaces of wall. The main defending line had gradually been pushed out from the centre to the circumference, with results as striking in an architectural as in a military sense. One of the finest, however, of these circular tower groups is one of inside towers facing the bailey; that is, the interior side of the gatehouse at Pembroke Castle. Pembroke has also a very fine circular donjon tower which, from the width of the now dilapidated staircase, was evidently designed as a residential tower. But the whole of the remains at Pembroke Castle are of the highest interest, and no architect going anywhere near the neighbourhood should miss seeing and studying them. Manorbier also, in the same part of Wales, is a castle ruin of exceptional interest on account of its extent and the degree of preservation in which it remains; it is possible to trace from the buildings the whole residential life of the castle.

Where the bailey was from the first surrounded with stone curtain walls, a residential hall and subsidiary apartments would usually be built within it; for even in those days of simple conditions of living, a high tower with the successive floors reached by a winding staircase in one angle could hardly have been regarded as a very commodious residence. One of the most extensive examples of the residence in the bailey area is presented by Durham Castle, the plan of which we reproduce from Mr. Thompson's book. This was mainly a late twelfth-century castle, but the gallery called Tunstall's gallery and the wide square staircase adjoining it, are sixteenth-century additions. In general, little architectural detail of a decorative kind was admitted into castle architecture, but the elaborate late Norman stair doorway at Durham shows that there were exceptions to this rule; and the interior arcade in the Constable's Hall is a very fine and bold piece of architecture of the period. Some architectural interest, in the usual sense of the word, attaches also to the castle chapels. The Normans almost invariably



(From "Military Architecture in England during the Middle Ages.")

provided, as a matter of pious duty, a chapel as part of the interior arrangements of a castle, even in early days, and here, of course, we find, as we might expect, the same characteristics as in ecclesiastical architecture of the same date elsewhere.

We observe that although the author explains the meaning and derivation of some terms relating to mediæval castles which are sometimes misapplied now, he uses the terms "pele" and "pele tower," without any explanation what a "pele tower" is. It appears to be from Welsh *pill*, which means merely a strong place, though the word "pele" seems to have been more used on the Scottish border than anywhere else. At all events, it does not mean any particular or specific kind of tower, but merely a strong tower of any kind.

As Mr. Thompson's book is written so as to be interesting and intelligible to general readers as well as to architects and archæologists, we hope it may be widely read and lead to a better general understanding of this remarkable class of historic remains in England, the interest of which is too little appreciated by the general public. Everyone can see the picturesque effect of the remains of an ancient castle, but few perhaps realise how much more is to be learned from them than merely what meets the eye; and this book will induce to a clearer understanding.

National Competition Designs.

THE prize designs in the National Art Schools competition are on view, as they usually are every year, in the long iron building at the back of the Natural History Museum.

Eleven Gold Medals have been awarded, chiefly designs of decorative work, in which class of design the Art Schools nearly always make the best show. There is one exception this year, however, in the shape of a marble bust in alto-relief by Miss Jessie Riding, of the Liverpool School of Art, for which a Gold Medal has been recently awarded by the judges, though it appears at first for some technical reasons of administration, which are not very easy to understand, the lady cannot actually receive the medal. But she has the honour of it the same, and her work is not only the best thing in the rooms but it is one which might claim a place in any sculpture exhibition.

The studies of the figure from the life, though none of them have commanded the highest honour, are many of them very good; Mr. Fuller, of the L.C.C. Clapham School of Art, obtains a silver medal for "shaded drawing of a figure from the nude." But these highly finished shaded figures are examples of that expenditure of time and labour on shading which has always been too much encouraged in the Art Schools under the Government Department. It is not the best form of education in the figure; half a dozen studies of a figure from different points of view, roughly shaded, teach much more than one elaborately shaded study; and the latter does not represent work of permanent value in itself. It is different with the painting of a figure; there is a place in the school for finely executed nude paintings, and the best that a student can do with them in the school, if he is going to be a painter, is so much practice towards an ultimate end. But no one wants highly shaded black-and-white figures; the time spent on them is merely an exercise, and it is not the most profitable form of exercise. For this reason we felt more interest in the "memory sketches of nude figures" for which two or three prizes (bronze medals or books) are awarded, and in the "Time sketches of figures from the nude," for which Miss Gough (Birmingham Aston Manor School) was awarded a



ARCADING IN DURHAM CASTLE.

(From "Military Architecture in England During the Middle Ages.")

books prize. These are much more educational in effect than figures highly shaded up to a kind of mechanical perfection.

Even in regard to the painting of the figure, however, it is doubtful whether efforts after perfectly finished painting are in place in the Government Art Schools; they are not made, at all events. The question is, are the students in these schools intending to become painters in the highest sense of the word? Probably none of them are; if they were they would go elsewhere for instruction; there may be one or two who indulge the dream of becoming eminent painters, but in all probability the dream never becomes a reality. The original object of the Department Schools was to improve design in English manufactures by training a school of designers and draughtsmen; and the study of the figure is an important element in connection with all decorative design. But that is what is really wanted—the knowledge of the figure so as to apply it in design; not the painting of pictures; and studies should be directed to that end.

Designs for textiles, wall-papers, and the decorative treatment of objects of use, are the best things produced in the schools; and as the gold medals are all, with the one exception already mentioned, awarded for applied art designs, it is not so surprising as some of the newspapers seem to think that out of the eleven gold medals awarded nine have been taken by women. Jewellery, textiles, and surface ornament are a class of design in which women are just as qualified to excel as men. At

the same time the gold medal for an "enamelled silver cloak-clasp set with topaz," by a lady student of the L.C.C. Camden School of Art, is a medal rather easily earned; the design is good in line, but distinctly poor in colour, when one considers what beautiful colour can be got in enamel. Miss Fitch's design (Hornsey School of Art) for "mural decoration" in a large circular panel, a draped figure in clouds with some child-angels fluttering about her, is a good and effective piece of mural painting; the companion picture is not so good. The drawing by Miss Nisbet (L.C.C. Clapham School), for which a gold medal is awarded, is perhaps the next best thing to Miss Riding's sculptured head; it is a symbolical subject of which the precise meaning is not obvious, but there is a touch of genius in it.

Among the silver medal awards Mr. Franklin's "Design for a crozier" (Aston Manor School), which professes to be in "Fifteenth-century Gothic" style, has hardly the characteristics of Gothic work, though it is not necessarily the worse for that. It should, by the way, be called an episcopal staff and not a crozier; a crozier properly bears (as its name signifies) a cross on the top, not a crook, and is, we believe, the special appanage of an archbishop.

The National Schools students constantly produce good textile designs, which ought to ensure them good employment in designing for manufacturers, but we understand this is not the case, and that the manufacturers, as a rule, renounce South Kensington and all its works. Why is this? One is inclined to think it must be the fault of the manufacturers.

There are various other good designs of this class; Miss Hinton's for chintz (Dudley Art School), which gained a bronze medal; Miss Taylor's (Hornsey School) for machine-printed cretonne, which are very bold and effective; Mr. Kellett's (Loughborough School) for woven silk hangings; and Mr. Pollard's (Armstrong College) for colour prints, in which figures are combined with foliage. Neither woodwork nor metalwork presents anything very good. A modelled design by Miss Reddrop (Lancaster Art School) for an overmantel, among the silver medal awards, deserves mention; this is an architectural design in miniature, with figures in some of the panellings; and another silver medal is given for Miss Hitchcock's modelled design in plaster for wall tiles—small nude figures in very low relief, connected by light festoons; something new and very pretty in wall tiling. In the same neighbourhood are some modelled designs for hand mirrors which are worth notice. In the Report of the Examiners we notice that they also express their dissatisfaction with the designs in structural ironwork, and notice that one design for a grille, which received a bronze medal, "might have obtained a higher award had there been a more harmonious combination of repoussé with wrought work." They might surely have pointed out also the more serious error constantly found in students' ironwork, of mixing realistic natural forms with conventional forms. Architectural designs in the National Art competition are never at a high level, and this year seem poorer than ever, an opinion in which the examiners evidently concur. This is no special matter for regret, however; it merely proves that architectural students who are in earnest do not go to Government Art Schools to study architecture, and it is not desirable that they should. The main value of the National Art Schools is to teach drawing and to encourage decorative design in applied art; and in this respect they have fulfilled their mission.

Drawings at the Architectural Association.

THE Architectural Association have been holding an exhibition in the Galleries at Tufton Street of "Work executed by the students since leaving the School." It is rather a mixed collection, and would have been more effective for a little more grouping of different classes of work. As it is, we find measured drawings and sketches of old work, designs made as

school exercises, and photographs of executed buildings all mixed up together in a manner which is rather confusing to the outside spectator. Apparently, also, there is a considerable amount of present students' work, at least of drawings which give that impression.

Two former students write to us expressing a good deal of dissatisfaction at the exhibition; some of their criticisms are rather captious; but one point of their letter which seems important is that there is not a sufficient representation of the work of the elder students, and that there should have been a more definite attempt made to get this adequately represented. We will quote the passage of their letter:

"It would have been better, and certainly would have caused more satisfaction to those who have any pride in their school, if the organisers had found out whether those students who had done any work were willing to show it, rather than to have filled up an exhibition of modern work with sketches of historical buildings. So far as the writers are concerned they have no personal axe to grind. They are exhibitors to the extent of the major part of the work they submitted, but of the elder students they are almost alone, and they can but regret that the show should be so unrepresentative of the real work of the school."

We may be permitted to comment that without knowing exactly what steps were taken in organising the exhibition, and what it would have been possible to obtain, we cannot well judge what ground there is for their criticism on this head; but we think it well to give it, for the consideration of those concerned in organising any future exhibition of the same kind.

It is difficult to say anything about an exhibition of so heterogeneous a character; we can only mention a few things noted in going round the galleries. Mr. Palmer Jones, who seems to be practising in Egypt (we have noticed from time to time some of his drawings of houses in the East, exhibited at the Royal Academy), has some water-colour drawings of interiors of a house at Luxor among which is an interior domed hall of rather Byzantine type. Mr. C. W. Ellis's photographs of small executed works make an interesting collection. Mr. P. E. Webb exhibits part of his drawings for the Institute Soane Medallion, "Monumental approach to a walled city," and Mr. Douglas Robinson his preliminary study for the same object, a very good and effective architectural sketch. Mr. Hepworth's pencil sketches, especially one of the upper part of Beauvais Cathedral, are admirable examples of that class of work. Mr. F. G. Troup exhibits his sketch competition design for the Port of London Authority building, showing an exceedingly clever plan, with the main building in three parallel blocks running north and south, and a south end block cantoned so as to bring the principal façade axial with Trinity Square; a domed octagon hall forms the central link between the parallel and cantoned portions of the plan. There is a good dome over it, but the lower portion of the design rather wants distinctive character. Mr. A. W. Robertson's "Guildhall," of which the complete set of drawings is shown, is another design for an Institute prize; the main hall, as we think we remember remarking at the time, is too square; a square is not a good form for a large meeting-hall; otherwise there is a great deal of ability shown in the drawings. A "design for a façade for Regent's Quadrant" is a scheme we do not approve of; this design is good enough in itself, but Regent's Quadrant ought to be completed according to Mr. Norman Shaw's design, and we are not disposed to countenance any alternative to this. There are some good designs for a street house in the Georgian style, which we suppose was one of the subjects set in the school; and among the third-year drawings is a design for a College Chapel, good from its own point of view, but we should have preferred less of the orthodox Gothic revival school. Gothic revival is a phase of modern architecture which has had its day, and can hardly any longer be considered seriously.

THE ARCHITECTURE OF SWEDEN.

ATTENTION having been drawn to Sweden, notably to Stockholm, by reason of the recent Olympic games, the present moment would seem particularly appropriate for a cursory glance at Swedish architecture. The castles of the country being unusually rich in architectural and historical interest, we reproduce a few illustrations of two representative examples. The castles of Gripsholm and Kalmar, the subjects of the accompanying illustrations, were erected under Gustavus Vasa, King of Sweden, whose reign extended from 1523 to 1560. During this period many strongholds and fortified castles were built in various parts of Sweden. Unlike the majority of English and German castles, for which elevated positions, difficult of access, were often selected, the castles of Gripsholm and Kalmar are situated on level ground, their sites, however, being to some extent protected by water. Gripsholm is perhaps the better known of the two. It stands in a picturesque position on the borders of Lake Mälaren, which penetrates the heart of Stockholm. The foundations of Gripsholm were laid in 1537, and the Vasa and Grip towers, with the connecting wing, being completed, the castle soon became the favourite residence of King Gustavus.

This same Gustavus Vasa, a tall man of his hands, and the liberator of Sweden, was known to his countrymen as Gustaf Eriksson. The surname Vasa, which is bestowed upon him by posterity, he never used himself. It is perhaps derived from the arms of his family—a vase or fascine such as those used in storming castles. He had much experience in that kind, driving out the invading Danes from one castle after another—Kalmar among them—until his people were free from the yoke of the foreigner. It was on June 23, 1523, that Gustaf was proclaimed King of Sweden, and the union with Denmark, which had existed for a hundred and twenty-six years, was finally dissolved. Gustaf was him-

self a sort of benevolent tyrant, making large schemes for the establishment of trade, and insisting that his commands should be carried out in minutest detail. No kind of business or trade escaped his notice, and he enjoined upon the master-workmen, on penalty of a fine, to engage apprentices and teach them with care and patience. He drew up regulations for the maintenance of greater cleanliness in the towns, and ordered that roads should be made from north to south throughout the kingdom, and that every parish should have its school. He died in 1560, and was buried in the chancel of the cathedral of Upsala.

The Vasa period in the building of Gripsholm is generally supposed to have ended with its acquisition by Queen Hedvig Eleonora, the consort of Carl X. During her time the castle underwent a number of minor alterations, and the Queen's wing was added. Under Gustavus III. the old church in the tower was transformed into a theatre, the Cavalier wing was built, and another storey was added to the Queen's wing. By this time the importance of Gripsholm as a fortress had declined, and the bridge which hitherto had connected the small island whereon the castle was built with the mainland was demolished, the narrow water in between being filled up. Other alterations and reparations were made subsequently by the Bernadottes and King Oscar II. The castle is very sturdily constructed, some of the walls being as much as 12 ft. in thickness. Red brick is the material principally used. A number of ante-chambers are located on the ground floor, amongst them being that usually known as Duke Karl's ante-chamber, an apartment the panels and wall decorations of which are all in the peculiar style of the Vasa period. Among the many fine rooms on the first floor is the Round Salon of Gustavus III., erected in 1769, containing the portraits of sovereigns contemporary with that monarch, including King George III. of England, Frederick the Great of Prussia, the Empress Maria Theresa of Austria, and many others. The Rikssal, the largest apartment in the castle, has been restored in the style of the Vasa period.

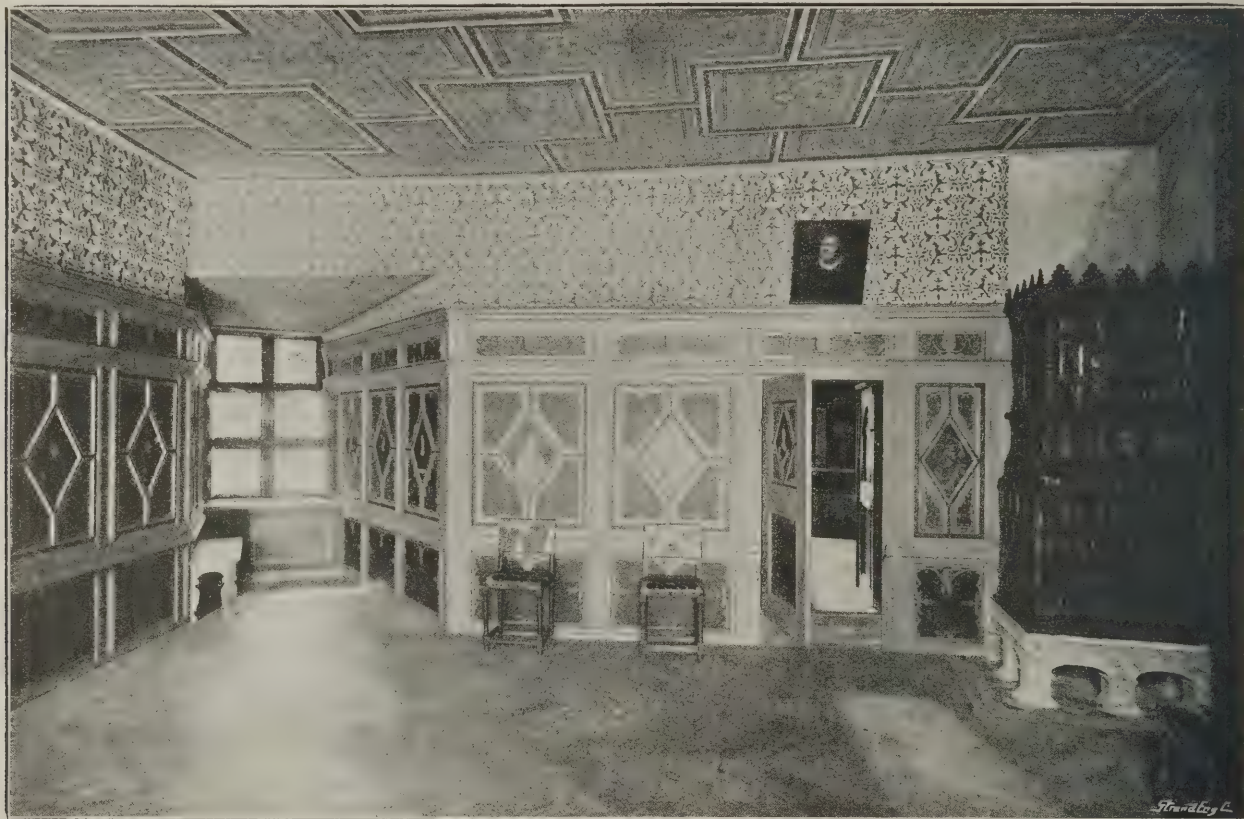


The foundations of this castle, which is picturesquely situated on the shore of Lake Mälaren, were laid in 1537.

CASTLE OF GRIPSHOLM, SWEDEN.

The Castle of Kalmar in many ways resembles that of Gripsholm. On plan it is an irregular square of exceptionally massive buildings, flanked by strong protecting towers, and having a fair-sized open courtyard in the centre. Although virtually rebuilt by Gustavus Vasa, Kalmar Castle is of much earlier origin than Gripsholm, the towers dating back, probably, to the year 1100. There was a round tower at each corner, and, in addition, the north-eastern and north-western sides were protected by separate towers, the one on the latter side being a

huge square structure called the Water Tower on account of the well contained within it. This tower formed what is known in Sweden as "Kärnan," the stronghold to which inmates or garrison retired in case of emergency. Those who have passed round the Sound will remember a big square red tower above the town of Helsingborg; this is an old "Kärnan" and all that remains of the ancient fortifications. During 1337 and the following years, the castle of Kalmar was materially strengthened by outer walls and auxiliary towers, it then being



DUKE KARL'S ANTECHAMBER, GRIPSHOLM CASTLE.



The castle of Kalmar is of much earlier date than that of Gripsholm, some of the towers possibly dating back to the year 1100. Auxiliary towers were added in 1337, and, some two centuries later, Gustavus Vasa erected the earthworks and strong corner towers.

KALMAR CASTLE, SWEDEN.

considered strong enough to repel all attacks that might be made upon it. Indeed, at this time it was commonly known as "The Key of Sweden."

With the introduction of the more effective weapons of attack, Gustavus Vasa determined to pull down the outer walls and in their place to construct earthen ramparts with strong corner towers, whereon cannon could be placed. The King himself prepared the designs, and took the greatest interest in the progress of the work. His scheme, however, was not completed during his lifetime, nor was it much advanced in the reign of Erik XIV.; but his successor, Johan III., considerably accelerated the work of reconstruction.

Of the castle itself, the towers, as already stated, had been built some centuries before; but it was not until the time of Gustavus and his immediate successors that the present castle was designed and completed. Gustavus, who was responsible for the rebuilding of the northern and the western wings, was anything but lavish, and it was left to his son, Erik XIV., who, in 1558, had taken up residence at Kalmar, to complete and beautify the interior. Capable German craftsmen were engaged, and the southern and eastern wings were rebuilt. Johan III., who was greatly interested in architecture, had as adviser Dominicus Pahr, who, after only a few years' residence in Sweden, was appointed master builder to the King. Aided by a staff of competent assistants, Pahr transformed the castle into an elaborate and luxurious royal dwelling. Kalmar suffered severely from the pillaging of the Danish soldiers during the Kalmar War, but not more than did the castles of Fredericksborg and Kronborg, in Denmark, from the Swedish invaders. Later, the castle of Kalmar had to suffer even a grosser indignity in serving as a Crown distillery.

In course of time, however, it regained its lost prestige, and now it stands restored, so far as has been possible, to

its former magnificence. Of its apartments, few, if any, can equal that which is called the Old King's Chamber, or Erik XIV. Chamber, situated in the north tower. It was probably used by royalty in mediæval times, when, however, it was nothing more than a low arched apartment, with small windows. In the year 1540, and during the following years, it was completely transformed; the walls were panelled, the windows were enlarged, and the ceiling was raised. Erik XIV. remained unsatisfied with the alterations his father had made and, at his instance, in 1562, the apartment was further elaborated and embellished, a new ceiling and panels being made from costly wood richly inlaid. The painted decorations were probably done by Dominicus Ver Wilt, who spent a couple of years at Kalmar. The frieze above the paneling represents hunting scenes in relief stucco, afterwards painted. The fireplace is of later date, apparently of the year 1654. This chamber is perhaps the most beautiful specimen of Renaissance work in the whole of Scandinavia.

Generally, brick is the material chiefly seen in the buildings of Scandinavia; although there are many wooden buildings, including churches, as well as some admirable stonework. It has been, however, very truly said that the neo-Classic architecture of Scandinavia is largely a matter of residences of the nobility. Some of these are of extraordinary interest, showing a bold pseudo-Renaissance design that strongly recalls good seventeenth-century German work, but of still greater independence and daring in the treatment of the semi-Classical details. The heavy-timbered roofs and the plastered walls, both elaborately painted in polychromatic designs, the unusually elaborate wooden dadoes and doorpieces, make the interiors interesting, and it has been declared that the exteriors of such buildings as the Crown Prince's Palace at Stockholm, and the Castle of Gripsholm, are as picturesque as anything on the mainland of Europe.



The Erik XIV. or "Old King's" Chamber is regarded as being one of the most complete and beautiful specimens of Renaissance work in all Scandinavia. The hunting scenes represented on the frieze are in relief stucco, painted over.

"THE OLD KING'S CHAMBER," KALMAR CASTLE.

THE VALUE OF GOOD ILLUMINATION.*

BY LEON GASTER

THE value of light is conceded for two main reasons: (1) its direct influence on the health of workers, and (2) its importance as a means of reducing the number of industrial accidents. It was the author's intention to deal with these two points in order, laying special stress on the influence of conditions of illumination on the frequency of accidents.

In referring to the effect of illumination on health, a distinction must be drawn between daylight and artificial light. The importance of securing adequate admission of daylight to work-rooms was recognised by authorities even before they had begun to consider artificial light. For example, the Building Acts in Great Britain and the recommendations of the London County Council on school-lighting included clauses specifying the desirable area of the windows for a given floor-space, etc. Special emphasis has also been placed on the value of abundant daylight in the legislation affecting such trades as enamelling and glasswork, where there is a possibility of lead-poisoning, and in connection with industries in which special precautions are desirable to avoid a tendency to tuberculosis.

It need hardly be said that habitual insufficiency in daylight illumination imposes a strain on the eyes of workers engaged in such work as printing, knitting, sewing, etc.; but this is only one among many of the evils induced by want of light.

Turning next to artificial lighting, it may be pointed out that we have not only

to deal with the unsatisfactory conditions that arise in factories through insufficiency of light; there is room for a vast amount of educational work in teaching managers of factories to utilise their lights to the best advantage.

The first necessity in lighting, whether natural or artificial, is that there should be sufficient light for the work. In the regulations in Holland a minimum illumination on the work of 10 lux (approx. 1 ft.-candle) was prescribed for general work, and in certain trades recognised to be specially trying to the eyes, such as jewellery, sewing and knitting, embroidery, engraving, etc., a minimum of 15 lux (1.5 ft.-candles) was specified. In Great Britain the authorities have been strongly impressed by the necessity for attempting to frame more definite rules specifying the amount of light required for various purposes, and the recent Departmental Report on Accidents in Factories and Workshops made special reference to this matter. Researches are still being carried out on this subject, but, meantime, the Report contained the important recommendation that "even before such a standard can be arrived at, it is recommended that the inspectors should be given general statutory powers to require adequate lighting in all places which are a source of danger by reason of insufficient lighting."

It must not be assumed that the provision of sufficient light is all that is needed. It is equally essential that the light should be wisely used. One of the greatest defects to be met with in much of the factory-lighting of to-day is that the lamps are not sufficiently shaded, and are too frequently

placed in positions in which they dazzle the eyes and impose a distinct strain on vision. Very few of the modern illuminants are sufficiently mild in intensity to be used at close range in this way.

Another point that requires attention is that the lamps should be placed in the right position. In writing, for example, it is a continual source of inconvenience if the lamps are situated on the right hand, so that a shadow of the hand is cast just where one wishes to see the page. The light in such cases should preferably come from over the left shoulder. This defect is not an uncommon one in banks and offices. It need hardly be added that in all mechanical operations (cutting, drilling, etc.) the direction from which the light comes is very important. Also that positions of lights which result in a shadow of the head or body of the operator being cast on his work should be avoided. Yet another defect in lighting to be guarded against is the use of unsteady and flickering sources of light, which are notoriously trying to the eyes.

All these defects must tend to increase the strain of employment and be prejudicial to the general health. In addition to this, there are certain occupations which are specially trying to the eyes, such as textile work, sewing, lace-making, engraving, watch-making, printing, etc., where good illumination is particularly essential.

So far I have spoken mainly on the value of good illumination in assisting an operator in his daily work and diminishing the number of absentees through ill-health. But there is another point that is perhaps equally important, namely, the value of good illumination from the point of view of safety. Those who have studied this subject are well aware of the considerable number of mishaps that arise through defective lighting. The Fidelity and Casualty Co., of New York, in a recent report,

*Extracts from a paper read at the Congrès Technique International de Prévention des Accidents du Travail et d'Hygiène Industrielle, Milan.



The heavy panelling of the coffered ceiling looks massive and sumptuous enough, but rather tends to create an uncomfortable feeling of apprehension as to what would happen to those beneath in case it fell.

A ROOM IN KALMAR CASTLE.

poor bad lighting *first* in a list of causes leading to accidents. Experience shows that it is in the dark winter months, when artificial light has to be largely relied on, that mishaps mainly occur. It has also been stated that a relatively large number of accidents occur after 4 p.m., this being the time at which artificial light becomes necessary in the winter time, and that the amount of "spoiled work" during this period is exceptionally great.

Among other obvious necessities may be mentioned the illumination of dangerous machinery. It is not of much value to place a guard round a dangerous machine if the light is so poor that its outlines cannot be clearly distinguished, and many a machine that would be considered safe in a well-lighted room becomes dangerous to the eye and limb if allowed to run in semi-darkness.

It may be pointed out that a bright light placed in the full range of view at the top of a flight of stairs, or in front of some staircase, may actually be the cause of a man stumbling, owing to his eyes being dazzled. A case is mentioned of a man who walked off a platform and was killed on some scaffolding—owing to this very cause; even those around him did not realise that he had not solid footing until he actually fell.

Many other instances of the way in which imperfect lighting leads to accidents might be mentioned. Besides the avoidance of dazzling lights, the direction from which the light comes is often important. For example, in certain tailoring works, in which the hand is held quite close to the sharp cutting edge of the tool, a bad shadow momentarily obscuring the tool may not only lead to spoiled work, but also to mutilation of the hand of the worker. Again, quite apart from actual personal mishaps of this kind, it is well known that badly lighted plant is apt to be neglected and allowed to become dirty, thus paving the way for an ultimate breakdown.

A special case might, no doubt, be made for the need for good illumination in mines. It is difficult in such dark surroundings to bring up the illumination to the same order as that above ground, but the supreme importance of the matter can scarcely be doubted. Here, as elsewhere, good illumination is one of the most effective safeguards against accidents. Concern has recently been caused by the spread of a nervous affection of the eyes known as "nyctagmus." According to the views of Dr. J. Court, of Staveley, and of the late Dr. Thompson, of Cardiff, it is due largely to the defective illumination produced by miners' lamps, so that better methods of lighting may be found to prove the desired remedy. This view has been taken by Dr. Jewell in a recent paper presented to the Royal Society. During the last year fewer than 1,618 men received compensation owing to their being afflicted with this malady, which is now coming to be regarded as an "industrial disease." Among the causes of the affection he places defective illumination first.

A great step has also been taken in the appointment, by the French Government, of a Committee on the Hygienic Aspects of Illumination, on which prominent physiologists and oculists, engineers and physicists, and inspectors of factories are represented.

It appears to me to be extremely desirable that this enterprising step on the part of the French Government should be followed in other countries. I have already made representation to this effect, and I trust that the time is not far distant when similar committees will be instituted else-

where. In such a matter as this, international co-operation would be of immense assistance.

One concluding step which should prove of the very greatest importance in raising the status of illumination in the future was the resolution passed at the International Electrical Congress at Turin last year, sanctioning the formation, by the Illuminating Engineering Society of London, of an International Commission on Illumination. This Commission, it should be explained, is to be competent to cover the whole field of illumination. It will deal with such questions as photometry, nomenclature, symbols, the rating of illuminants, etc., but it will also have power to study more practical questions, such as the amount of illumination required in various industrial employments, the hygienic effects of the various illuminants, and in dealing with such it will naturally avail itself of the conclusions reached by the expert committees on the hygienic aspects of lighting suggested above, and should have great weight in ensuring their being carried into effect in practice.

This International Commission on Illumination will also be recruited from local committees in each country, many of the members of which might naturally also be members of the national committees on the hygienic aspects of lighting. In this way all these various agencies could work hand-in-hand for the improvement of illumination, and assist each other. It might also be suggested that in allotting the work each country might be charged with a certain section in which it was specially interested and was particularly fitted to perform. The results collected should be sent periodically to the various committees and discussed at international conferences.

What, therefore, are the steps which may be suggested as a means of improving industrial lighting, and what parties are likely to benefit by them?

One step I have already indicated, namely, the formation of Governmental committees on the hygienic aspects of lighting in the chief countries of the world, and their co-operation with a view to securing corroborative evidence where necessary, but avoiding unnecessary duplication of work.

In attacking this problem, co-operation is most essential. It would, for example, be to the benefit of many companies to arrange for the services of an expert in measuring illumination as well as a physiologist, to work together in tests of this kind, and the committees appointed to investigate the matter would require to be fully representative in character. It would naturally be the function of the committee in each country to make use of all the existing channels of information, and to collect the results together, as well as organising special researches.

In conclusion, it may be pointed out that an improvement in the conditions of lighting in factories would be an all-round benefit. To insurance companies it would be advantageous, because it would diminish the risk of accidents, both personal and through fire, and mishaps to machinery. I venture to suggest that it would pay such companies to allow specially favourable rates to businesses in cases in which the illumination was up to a prescribed standard (just as is already done when the precautions against fire are exceptionally complete). The employees would indisputably benefit, seeing that they would work under pleasanter conditions and with less risk. And the employer would benefit in several ways. The cost of improving the lighting would certainly not be grudged if once it were shown

beyond doubt that improved illumination led to fewer accidents.

The enlightened employer also recognises that it is to his interest commercially to secure adequate illumination because of the improved output and quality of work. Mr. Roscoe Scott has recently pointed out that in very few businesses does the cost of lighting amount to more than 5 per cent. of the wages bill (in the case of an incandescent lamp factory it was less than 1 per cent.), so that any small expense involved in putting the lighting on a proper basis would be very readily repaid by the improved work and freedom from accidents and mishaps secured as a result. An interesting illustration of this fact is afforded by the cotton industry. It appears that "summer-made" goods, in certain classes, are invariably listed at a higher price than those made during the winter, the explanation offered being that, owing to the inferior artificial light in winter, the quality of workmanship is not so good.

[Since this paper was written, the author adds, the Home Secretary, in reply to a question in the House of Commons by Dr. A. Lynch, has intimated the intention of the British Government to appoint a Departmental Committee on the Hygienic Aspects of Illumination.]

THE SITE FOR LONDON UNIVERSITY.

It will be remembered that three sites for the new building for London University have been prominent in the minds of the public and of the special committee appointed by the Senate to deal with the subject. These sites are (1) the land adjoining the new County Hall, on the south side of the Thames; (2) the site of the Foundling Hospital, in Guilford Street, W.C.; and (3) a portion of land on the Duke of Bedford's estate near the British Museum.

With regard to proposal (1), while it must be admitted that the presentation of a noble frontage on the south side of the Thames would be good pioneer work towards the architectural regeneration of the sordid south side, the advantages to the University itself are not very obvious. In choosing the site for a university there are many considerations that must be taken into account besides those that are purely architectural—the convenience, health, and comfort of the staff and students, for example. Their surroundings must be cheerful and healthy, and the building must be to the utmost degree accessible. In these respects the South London site certainly does not compare favourably with the others.

The Foundling Hospital site was most strongly advocated by various newspaper correspondents, who were able to advance excellent reasons for the choice. Thus "M.A." writes: "There can, I think, be no doubt in the mind of any person acquainted with the University requirements as to the superiority of the Foundling site, with its nine acres of ground available for building and surrounded by a similar acreage of grassy lawns, flower beds, and timber, ensuring absolute quiet and freedom from vibration, over the site on the south bank of the Thames adjoining the County Hall, of much less size, involving greater cost, having the proposed new highway to Waterloo Station immediately in the rear, with the noise and dust of continuous heavy traffic, and, over and above all, dominated by that hideous monstrosity—the Charing Cross railway bridge. With regard to accessibility, there can be no comparison between the Foundling and any other available site in

London, seeing that it is only a few minutes' walk from the great trunk railway termini of King's Cross, St. Pancras, and Euston, within fifteen minutes from Waterloo by the Bakerloo and Piccadilly Tubes to Russell Square Station, while the London County Council trams in Gray's Inn Road, two minutes' from the side entrance, connect up with Hampstead, Islington, the Embankment, and South London."

This site was recommended by the committee, and its approval by the Senate of the University was secured *nem. con.*, although it is understood that this does not settle the matter quite finally. The following official report will show the exact situation:

Proposed Site for the Headquarters of the University of London.

At an extraordinary meeting of the Senate of the University of London held on July 17 by order of the Vice-Chancellor, a report of the Site and Accommodation Committee was presented.

After an amendment in the following terms

"That the report be referred back to the committee for further consideration with a view to its fuller elaboration in regard to the question generally and more particularly to its bearing on the general policy of the University"

had been negatived, the following three recommendations of the committee were adopted without a division:

1. That the Chairman of the Site and Accommodation Committee and the Principal be requested to communicate with the Drapers' Company with a view to ascertaining whether the Foundling Hospital Site would receive their approval for the erection thereon of a Senate House and administrative Offices at an approximate cost of £60,000.

2. That the Vice-Chancellor be requested to inform His Majesty's Government that the Senate, after having carefully considered the advantages and disadvantages of the various sites which have been brought to their notice, have come to the conclusion that the site of the Foundling Hospital is the most suitable now available for the provision and erection of new headquarters for the University; and to ascertain whether, if promises for a substantial sum of money be obtained towards the cost of the acquisition of the site, His Majesty's Government would be prepared to give effect to the Treasury Minutes of February 16th, 1899, and July 13th, 1899, so as to enable the site suggested to be secured and suitable buildings to be erected thereon.

3. That the Vice-Chancellor be requested to communicate Resolution 2 above to Viscount Haldane, and to invite him to submit it to those persons who have already shown their interest in the University by offering donations towards the purchase of a site, with an expression of the hope that he will use his influence with them so that their offers may be available for the purchase of the site named in that Resolution.

W. P. HERRINGHAM, Vice-Chancellor.

The Treasury Minutes to which reference is made are concerned with the transfer of the University from Burlington Gardens to South Kensington. Their meaning appears to be that the Government undertook to provide and maintain a dignified and suitable home for the University as reconstituted by the Act of 1898 on conditions of tenure not less secure than those enjoyed at Burlington

Gardens. Further, the Government undertook the responsibility of providing such additional accommodation as might later be needed for the full extension and development of the University under the Commissioners' Statutes and Regulations.

Naturally, the advocates of the south-side site are not pleased with this decision, nor have they entirely given up hope of altering it, as witness this letter from Mr. Holford Knight: "Is the opportunity to be lost of placing the County Hall and the University side by side on the river bank, thus providing a noble monument to the union of the civic life of London with education which is rich with promise for the future of our metropolis? Let Londoners request their members of Parliament to support the efforts which will be made to secure this splendid end. I appeal also to the thousands of men and women who belong to the University to bring their views before Parliamentary representatives."

The suggested blend no doubt represents a very worthy ideal, which, however, does not necessarily depend on juxtaposition for its realisation; and against it must be set the superior size of the Foundling site, which is more than nine acres, as compared with the $7\frac{1}{2}$ acres available on the south side; is near the British Museum; and is surrounded by breezy and leafy squares and gardens—free from the noise and grime and bustle and traffic of the south side: which one would like to see regenerated, but not at the expense of London University. Moreover, there are those who would not like to see the architect of the new University buildings, whoever he may prove to be, handicapped by the necessity of conforming to the treatment of the new County Hall. On the Foundling Hospital site, the architect will be entirely free to give the London University building a character all its own.

In the House of Commons last week Mr. Rowlands asked the Prime Minister whether the proposal made to the Royal Commission on University education in London by Sir Francis Trippel, and endorsed by them, to acquire a site on the Bedford estate for housing the University of London still had his approval; and whether, in the event of the Foundling site or the river site being selected for the University buildings, the moneys subscribed for the Bedford estate site would be available for either of the alternative sites.

Mr. Asquith replied that no proposals as to the acquirement of any site had been made to the Royal Commission or had been endorsed by them. He had thought the Bedford site a good one when he was informed by Lord Haldane of the possibility of its acquisition, and he still thought it a good one. The second part of the question he could not answer.

OUR PLATE.

A French Garden at Long Island, N.Y.

The proprietor of a mansion in the Roslyn Valley, Long Island, New York, conceived the happy idea of forming a genuine French garden in his demesne, and he called in a noted French architect—M. G. Gréber—to design it. As will be seen from the fine illustration which this week forms our Centre Plate, the garden is strongly reminiscent of Versailles and of Marly. It is clear that the situation of the garden, axially to the side of the mansion, was determined by the extensive view thus obtained.

BREVITIES.

The bridge over the Wandle in High Street, Wandsworth, is to be rebuilt at a cost of £5,500.

"Modernia" tiles, to the extent of some 500 yards, have been used on the lavatory walls of the new council offices, Derby.

A new landing pier, costing £10,878, is to be erected on the foreshore near the East Parade at Southend.

Milan and Como Cathedrals have been declared to be in imminent danger of the collapse of their respective façades.

A memorial window to Izaak Walton, the "Compleat Angler," is proposed for the south transept of Winchester Cathedral.

Radcliffe, Lancs., has in hand a housing scheme, to cost £26,600. The houses are to be of four types, ranging in cost from £165 to £210 per house.

A proposal to build shops in Park Lane has been placed before the Improvements Committee of the Westminster City Council, who deprecate the idea.

Manchester Corporation has rejected the proposals of the directors of the Manchester Royal Exchange with respect to the projected enlargement of that building.

Dr. J. J. Acworth's gift to Cricklewood of a public clock at the junction of Anson and Edgware Roads, as a memorial of the Coronation of King George V., has been unveiled.

Edinburgh Town Council are contemplating a town-planning scheme for the Bellevue district of the city, and have conferred upon the subject with representatives of the Hope and Heriot Trusts.

Marylebone Borough Council has received an intimation that the Improvements Committee of the London County Council are prepared to contribute £2,000 towards the cost of forming a circus at Baker Street.

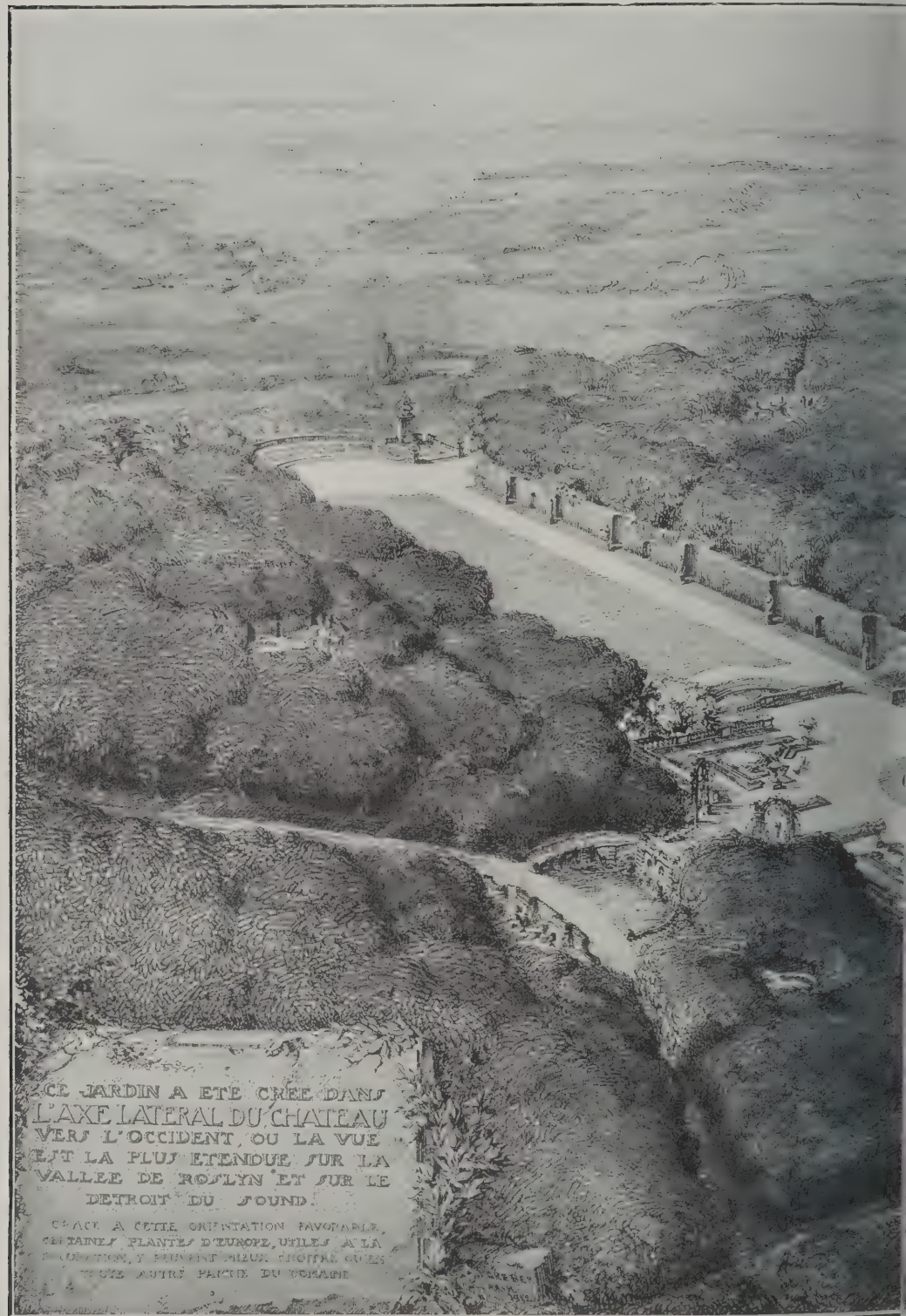
Clerkenwell fire-station is to be extended at a cost of £8,180 on the site of No. 42, Rosebery Avenue, and the existing building, which was erected in 1870, is to be reconstructed and modernised. The whole scheme involves an outlay of £23,000.

The drastic improvement of Calcutta from a town-planning point of view has been strongly advocated in detail in a long letter addressed by the Bengal National Chamber of Commerce to the Calcutta Improvement Trust.

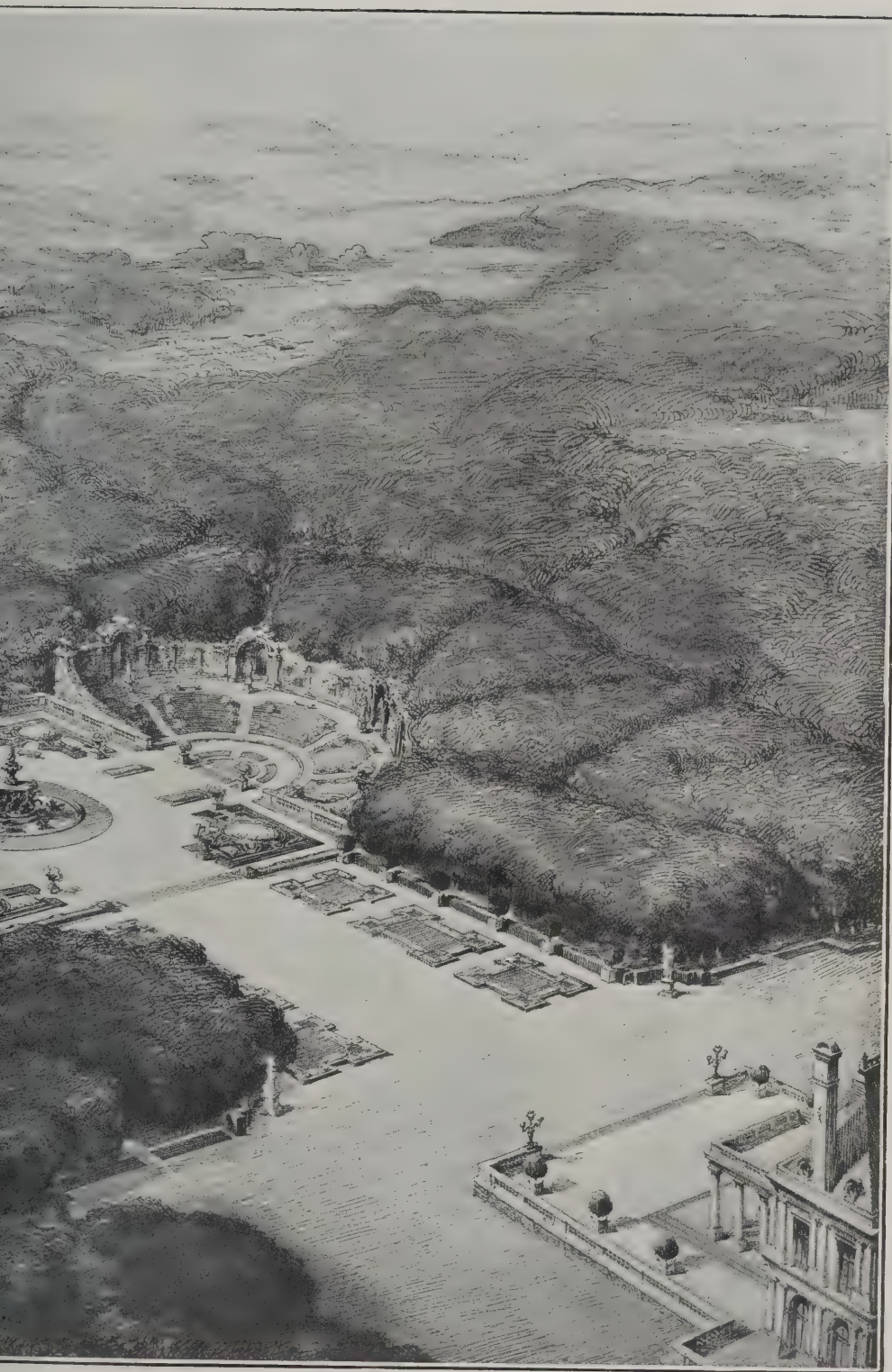
A scheme for a new town hall for Walsley, prepared by Messrs. Briggs, Wolsenholme, and Thornley, and estimated to cost £102,500, has been under consideration by the Town Council, who seem disposed to cut down the estimate.

Mr. John W. Simpson, F.R.I.B.A., has just been elected "Membre Correspondant" of the "Société Centrale des Architectes Français." This distinction is shared by only three other living British architects—Sir Aston Webb, R.A., Mr. Phené Spiers, and Dr. J. J. Burnet.

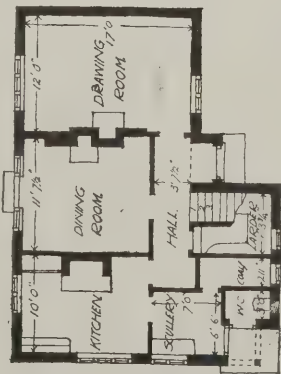
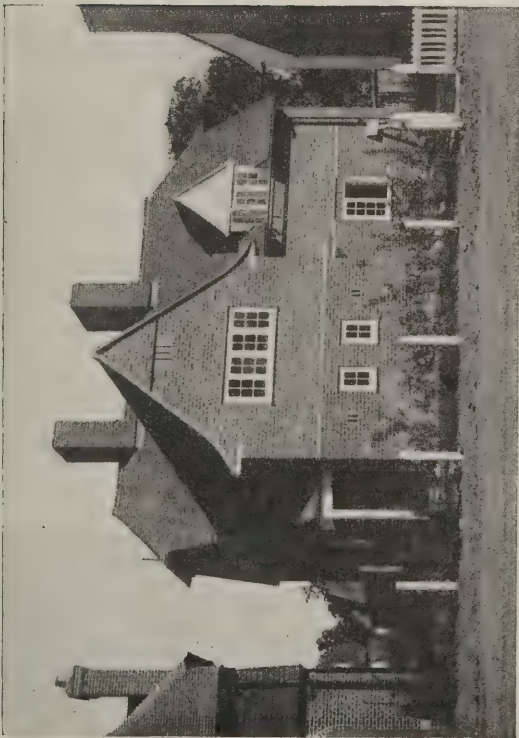
A writer in a Yorkshire paper proudly points out that Mr. Edwin Cooper, F.R.I.B.A., whose designs have been selected by the Port of London Authority for the new offices about to be erected in Trinity Square, London, at a cost of £300,000, is a native of Scarborough, and is the architect of the Law Courts and Guildhall at Hull.



FRENCH GARDEN LONG ISLAND, NY

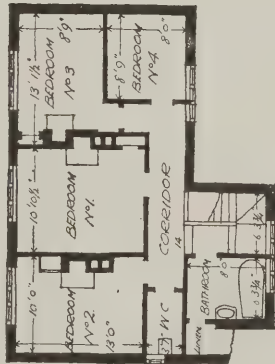


ARK. G. GRÉBER, ARCHITECT.



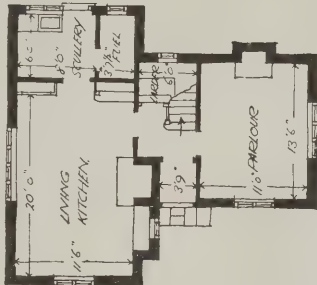
GROUND PLAN.

SCALE OF 0 10 20 30 40 FEET.



FIRST FLOOR PLAN.

SCALE OF 0 10 20 30 40 FEET.



GROUND PLAN.

SCALE OF 0 10 20 30 40 FEET.



FIRST FLOOR PLAN.

The external walls of these cottages, which are hollow, are faced with red bricks, chosen for their variety of colour. The roofs are covered with sand-faced tiles. Where practicable, small patterns in tiles have been introduced around pug-holes, air vents, etc. Mr. H. Hurst, of Letchworth, was the builder.

COTTAGES AT GIDEA PARK, ROMFORD. JONES, PHILLIPS AND WHITBY, ARCHITECTS.

THE STANDARDISATION OF SEWER
AND DRAIN PIPES.

In the course of a paper read at the thirty-ninth annual general meeting of the Institution of Municipal and County Engineers, Mr. Ernest J. Elford said that for some years a committee of the Institution had been engaged in preparing, at the instigation of the British Engineering Standards Committee, a draft specification for sewer and drain pipes, and its scope had been extended to enable it to deal generally with the subject of standardisation. In the course of their investigations the members of the committee (which was referred to as the municipal committee) had accumulated a large amount of evidence as to the inferior and unreliable quality of many of the pipes manufactured in various parts of the country, and they had been urged to do something to drive out of the market materials of this description. For this reason, in addition to various suggested tests for the finished article, they put forward the suggestion that if found practicable some chemical standard for the materials of which the pipes were to be made should be included in the standard specification. It was thought that it might be found that the elimination of certain constituents from, and the inclusion of others in, the material of which the pipes were manufactured was essential for the production of thoroughly vitrified pipes; but unfortunately the chemists were of opinion that a chemical standard of this kind was not practicable. A few years ago the best pipes, in fact it might almost be said the only pipes of high quality, were those manufactured from the Devon and Dorset clays; but since then many of the Midland and other makers had, as the result of experimental work and the exercise of great care in the selection and blending of clays and improvements in manufacture, been able to produce pipes of the highest quality. The terms stoneware, fireclay, and earthenware, as applied to sewer and drain pipes, were almost more or less ambiguous; but pipes made from Devon and Dorset or similar clays were generally included under the term stoneware, while pipes of Midland and other clays were usually designated fireclay or earthenware. Since, however, the latter were so much improved in quality these descriptions had practically lost all value. The aim of the committee was to prepare a specification in such terms that all first-class pipes might be admitted and all inferior pipes rejected, and to ensure that all standard pipes should be made of dense, highly vitrified material. The old names had therefore been discarded and standard pipes were to be designated "vitrified ware sewer and drain pipes."

The suggested chemical standard for the material having proved impracticable, the committee had to fall back upon an absorption test, and it was hoped that this would be found both convenient and effective. One fact which had been brought to light while experimenting in regard to absorption, and which to most engineers would no doubt appear somewhat surprising, was that the salt glazing had very little, if any, effect upon the absorption, particularly in the case of better class pipes. It was thought at first that the glazing would interfere with the proper application of an absorption test; but it had been found that, for practical purposes, the effect of the glazing could be ignored in ascertaining the absorption figure. When applying a test of this kind

it was, of course, essential that the samples should first be dried to constant weight, and with pieces of the size proposed this could be done under a temperature of 150 deg. C. in less than an hour. By subsequently boiling the samples as proposed, the maximum absorption was reached in forty minutes, so that the testing could be completed in a very short time. The manufacturers on the sectional committee of the Engineering Standards Committee were not unanimous on the question of an absorption test, but a majority was in favour of the inclusion of a test of this kind.

The internal water pressure test was to be adopted as a test for strength and soundness of the finished pipe, and the scale of pressures had been so calculated that the material will be required to sustain without damage a tensile stress of from 100 lb. to 125 lb. per sq. in. of sectional area. The general opinion was that for important work it was desirable to apply this test to each individual pipe, but having regard to the cost of so doing, the specification would contain alternative conditions which would enable engineers to call for pipes which had passed individually the hydraulic test and been stamped with the word "tested," or for pipes which had been made to the standard specification and were supplied as being capable of withstanding this test.

The specification also dealt with such matters as thickness, length, shape, permissible deviations, glazing, and the marking of all pipes sold as complying with the standard specification, and the marking before sale of all inferior or defective pipes, and with the question of joints. For obvious reasons it was impracticable to adopt as a standard joint one which was covered by existing patent rights, and it was probable that the sectional committee would recommend a simple form of Stamford joint, the manufacture of which was now quite unrestricted. The cost of these pipes must necessarily be somewhat higher than that of ordinary socket and spigot pipes, but the labour of laying and cost of jointing material would be less, and it was hoped that in course of time local authorities might be able to obtain power to enforce the use for house drains, etc., of pipes, but the labour of laying and cost of and true invert, and that the standard Stamford joint might take the place of the old form of joint for all ordinary work.

In addition to the work of the sectional committee on sewer and drain pipes, the Institution had representatives on the sectional committees of tramway rails and cast-iron pipes for water, gas, and sewage, and representatives had also been appointed to attend a conference to consider the standardisation of road macadam. In addition, representatives of the Institution's Standardisation Committee had taken an active part in the preparation of a standard specification for street lighting, by a committee called together by the Institution of Electrical Engineers. The draft specification, which contained provisions standardising the unit and method of measurement, classification of streets, tests and testing, etc., had now been completed and would be considered by the Councils of the respective Institutions represented on the committee. Probably, however, the most important work upon which the Standardisation Committee of the Institution had been engaged—apart from the specification for vitrified ware pipes—was the specification for artificial stone paving. This was first issued about a year ago and had had a good circulation.

LONDON MASTER BUILDERS'
ASSOCIATION.

The Council of the London Master Builders' Association met on July 18, the chair being occupied by Mr. James S. Holiday, president. The special committee appointed to confer with the representatives of the various trade organisations submitted its reports of the several conferences which had been held, and these were unanimously adopted. The recommendation of the Law and Parliamentary Committee in respect to important legal cases affecting members of the association was approved and adopted. Correspondence relating to trade matters was read.

The following firms were nominated for Associate membership: Messrs. C. Burley Ltd., Sittingbourne; Messrs. Samuels South and Son, Edmonton.

PROJECTED VISIT OF GERMAN
TOWN PLANNERS.

The Garden Cities and Town Planning Association of 3, Gray's Inn Place, W.C., are arranging for another visit of members of German municipalities to inspect English garden city and housing schemes under the guidance of Mr. Culpin, the secretary. The party, about 100 strong will arrive in England on August 18th, and the next fortnight will be spent in visits to practically every housing scheme of importance in the country. Among other places which will be seen are the garden villages of Hull, Earswick, Port Sunlight, Bournville, and Knebworth, the garden suburbs of Wavertree (Liverpool), Harborne (Birmingham), Hampstead, Ealing, Ilford, etc., while special interest will be taken in the garden city at Letchworth, where, it is claimed, more nearly than any other place in this country the question has been solved of the provision of labourers' dwellings at an economic rate. Municipal housing will be studied in the various towns visited, and the estates of the London County Council will be visited. Among the party are some of the prominent town planners and architects of Germany and Austria, while the town of Riga sends a number of officers to investigate. The visit affords an excellent opportunity for town planners in England to meet those who have actually done such work in Germany, and any students and others who would like to join the party at any point or to meet at their social gatherings are invited to communicate with Mr. Culpin at the above address.

Restorations at Rome.

The equestrian statue of Marcus Aurelius on the square of the Capitol at Rome has been found at Rome to be suffering from the infiltration of water, and a technical commission has advised its prompt repair. Accordingly the Municipal Council has voted the sum of £180 for the careful restoration of the statue. In order to execute this work it will be necessary temporarily to remove the figure of Marcus Aurelius from his horse and to transport the former into the Palazzo dei Conservatori—an operation which will involve a further charge of £38. Thus American summer tourists will find the Capitoline square denuded of its chief attraction. Another restoration, near at hand, which has just been completed, is that of the splendid ceiling of the Church of Ara Coeli, commemorative of the victory over the Turks at Lepanto in 1571.

OBITER DICTA.

The Façade and the Flower-Box.

The place Vendôme is one of the most interesting, historically and architecturally, in Paris, but each time I enter it I am oppressed (and I have heard others express the same feeling) by its coldness, due, no doubt, to the formality of its surrounding architecture and the broad expanses of unrelieved pavement. I believe this effect could be quite changed and the place transformed into one of the beauty spots of Paris were the various hotel managers and others interested to follow the example of Bechoff-David and place flower boxes on each window facing the place. This suggestion is offered for what it is worth by one of your readers who has been greatly impressed by the very pleasing effects obtained through the general use of window flower boxes in many of the European cities.—“An American Architect,” in the *Paris* “New York Herald.”

The Oxford Millenary.

That Oxford existed long before the year 1000 is not open to doubt, and if we accept the recent historical theory, which finds the origin of the West Saxons not in Hampshire, but near Dorchester-on-Thames, it is possible that the district of Oxford played an important part in the unrecorded history of Saxon England. Tradition has associated both the University and the city, in much later times, with the name of Alfred the Great. In 1726 a royal decision made University College a royal foundation of King Alfred, and gave him authority as the Court of King's Bench could provide to a theory which the college itself had adopted in the course of the fourteenth century lawsuit. In 1872 the college actually celebrated its “millenary,” and this finally disposed of any claim of the University or its oldest college to be in any way connected with Alfred the Great, and the celebrations of 1912 belong wholly to the city. By 912 Alfred had died in his grave for more than a decade, and his personal connection with Oxford is by no means certain; but Oxford owes to him this—that he saved this part of the Thames Valley from being permanently included in the Danelaw. The event which has just been celebrated is recorded in the Anglo-Saxon Chronicle for 912, which tells how Alfred's son, King Edward the Elder, after the death of his brother-in-law, Ealdorman of Mercia, “took possession of Oxford and of all lands that owed obedience thereto.” The present year is thus the 1,000th anniversary of the recorded existence of Oxford as a county town.—“Times.”

The Sordid Southern Side.

The mere suggestion that the London University should be erected on a site next to the new County Hall brings us a step nearer the rehabilitation of the south side of the river, whose condition has been one of the puzzles as well as the scandals of London. Why should the few score of bridges across the bridges have meant all the difference between dignity and squalor? Think of the contrast between the parallel thoroughfares—the Strand on the north, and Bedford Street on the south!—“Observer.”

The Front Parlour Fetish.

A large number of our farmhouses, let me point out, are provided with only one unmodious dwelling-room. Yet the purveyor, it is urged, must have a cottage for him with its parlour, and on no

sufficient grounds. The fetish of the parlour for the houses of the labouring classes is one which, in our opinion, it is the duty of housing reformers and sanitarians to abolish, and we are confident it will be to the gain of the public health when it is slain for good.—“Sanitary Record.”

London's Handsomest Building?

In a most attractive article by C. Lewis Hind on Street Architecture [in the “Daily Chronicle”], there is a question, “Which new buildings in London does it give you pleasure to look at again and again?” to which various answers are cited. I am somewhat surprised that two instances—each undoubtedly good (superlatively good) in its way—are not quoted: the Fleet Street Branch of the Bank of England (Italian Renaissance), one of the most perfect and restful late additions to our street architecture, and the Astor building (late Gothic) on the Embankment. The R.C. Cathedral at Westminster is indeed noble; but how lost there! What would many of us give to have it in place of our Natural History Museum—how it would enrich that site—or of the Victoria and Albert Museum!—T. W. Littleton Hay, in the “Daily Chronicle.”

London Street Architecture.

I am entirely at one with Mr. Lewis Hind “that there is no unity in London's modern street architecture; each man would seem to be for himself.” This is the key-note to the failure of street architecture to-day. The whole thing is an appalling jumble, restless to a degree. The reason why Regent Street, as at present, and the parks and squares of London are so restful and pleasing is due entirely to their having been designed as a whole and not in small parts, thereby giving the architect an opportunity to secure a “breadth” of treatment and “scale” in his design, which is otherwise impossible. What is wanted in London (in all towns in fact) is a tribunal of art, that shall consider each design from the architectural point of view (in the same way as the councils now consider them from the point of view of their bye-laws). We shall then probably get a design for, say, No. 10, Oxford Street, not only good in itself, but bearing some relation—at once apparent—to Nos. 8 and 12 on either side. The L.C.C. have made a step in the right direction by putting all the new Kingsway buildings under the supervision of one architect—Mr. Norman Shaw, R.A.—and I hope the new “London Society” will advocate this method as one by which London will later be able to hold up her head and bear comparison architecturally with other great cities.—Herbert A. Welch, in the “Daily Chronicle.”

A Sidelight on Town-Hall Planning.

The rearrangement of the office accommodation at the Leeds Town Hall, ensuing upon the transference of the police department to the portion of the building which has been vacated by the Town Clerk and his staff, has necessitated a good many alterations to the building itself. Partitions are being erected, old doors are being closed up, and new ones are being made. A requirement is being met by the erection of large doors across the main corridor, at either side of the entrance to the Council Chamber, so as to shut off the steps which lead up to the Lord Mayor's rooms. This, it is hoped, will secure the complete privacy of that part of the building. These doors will put an end to a sport which has been enjoyed by Leeds school-children for more than half a century. The main corridor runs right round the building; one may enter it at any of

the outer doors, and by walking straight ahead—turning the corners as one encounters them—arrive in due course at the starting point. It has ever been a favourite game of the children to enter by the back door of the hall, in Great George Street, and keeping a sharp look out for the porter, policeman, or other official who may inflict summary punishment, dart round to the front of the building and down the steps into safety in Victoria Square. Boys braver and more adventurous than the average have been known to make the full circuit past the Magistrates' Clerk's department, past the law library and Crown Court, to the point of entry.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

The New Australian Federal Capital.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—On looking over the designs for the Federal capital of Australia [see our issue for July 10th, pp. 33-35] one cannot help noticing how little each of them resembles the configuration of the ground forming the site for same. A slight examination of the contours, the distribution of water and wooded ground, and the different soils, will instantly reveal this. I must hasten to say that, as to the designs themselves, they are evidently very cleverly contrived, and the boulevards and various features would, when executed, have a magnificent effect. I have one criticism to make, however—viz., that the gridiron method of planning which has crept into the system of smaller streets detracts rather considerably from the effect of the main thoroughfares, by the numerous crossings they make. Then, the parallel streets in their turn cross *these*, and neither lead up to nor circle round any point, nor do they follow contours. In these days cities need not be planned nearly so closely as formerly (causing the present enormous ground rents), with the consequent unhealthy conditions. The historic city wall no longer makes it necessary.

To return to the configuration of the site: The river which flows through the city in two of the designs undergoes some drastic changes in shape, and in some cases the old river bed appears to have been built upon! One would have thought the river would have been kept open and the alluvial ground skirting it made into open spaces, etc., providing a broad air-duct through the centre of the city, and that the buildings would have been placed on higher and more sanitary sites. Again, there is a horseshoe-shaped depression on the north side of the river which would have made an admirable piece of ornamental water. The steep sides enclosing same might with great advantage have been surmounted by some important buildings, greatly adding to their appearance. This feature on one design is completely obliterated by a perfectly circular road half on and half off the horseshoe! On the south side, nearly opposite, is a delightful little valley (or park), but on none of the plans is a trace of this to be found. Once more, the higher ground towards Black Mountain and to the south-west, but more especially the higher ground on the eastern boundary, provides exceptional sites for winding roads and larger residences commanding a magnificent view of the city.

Yet all that is seen on one design is the gaol, and on another nothing!

After all, if the designs are perhaps going to be pooled and "a park taken from one, a boulevard from another, and a public square from a third," the interest of the city will, I am afraid be lost—as well as a grand opportunity.

Biggleswade.

ONLOOKER.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

Lighting and Ventilation of Schools.

SIR,—From correspondence appearing in your columns it seems that in a modern cross-ventilated class-room the ventilation is near enough to perfection for practical purposes, yet the rooms are not perfect for working in.

Are we not striving to obtain by ventilation what can only be obtained by abundant light? Light is necessary to stimulate the brain into activity. Darkness tends to cause drowsiness. The human eye is adapted for use in the open. On a sunless day in an average modern well-lit classroom the amount of light falling on a desk 10 ft. away from the window wall is about 3.33 per cent. of the amount that would fall on the desk in the open. Even allowing for the great facility with which the eye adapts itself to working in various lights, it would seem from the above that more light is desirable in a classroom than is usually given.

Of course, using white paper in a strong light is a great strain on the eyes. I believe oculists have long advocated the use of light letters on a dark ground as being preferable to the usual system of black on white.

Mr. Wilson's letter and diagrams published in your issue of July 24th are reminiscent of the adventures related in Mr. H. G. Wells's "The Time Machine." It is there recorded that the gentleman in the machine went at such an enormous pace through the æons that the path of the sun in the heavens resembled a band of fire. It is true Mr. Wilson only gets in two revolutions of the earth in the twenty-four hours, but Mr. Wells's hero went slowly at the start.

EDWIN SMITH.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

The Port of London Authority Competition.

SIR,—In your article referring to the designs submitted in the final competition for the Port of London Authority's new head offices, there appears to be an error in the identification of two of the designs. It is evident that, owing to the fact that no names were attached to the designs when exhibited, Mr. Truelove's has been accredited to myself, and *vice versa*.

I should be glad if you would correct this in your next issue.

ERNEST W. WRAY.

[Mr. J. Reginald Truelove has sent us a letter to the same effect. We greatly regret the confusion, which, as our correspondents recognise, arose through the absence of any indication of the authorship of the respective designs.—ED.]

The New Church of St. Mary, West Fordington.

The church of St. Mary, West Fordington, Dorchester, which was dedicated by the Bishop of Salisbury recently, has been erected at a cost of £11,500. The church is built of hard Swanage stone, mainly in the Transition Gothic style. The architect is Mr. Ponting.

TIMBER SPECIFICATIONS.

A conference has been held at the Institute of Builders, Kingsway, between a sub-committee of the Institute and some six members of the Federation, to consider a suggested standard timber specification for contract work, with the object of eliminating obsolete terms in the general forms of tender for building construction. The chair was taken by Mr. Bartlett, of Perry and Co., of Bow; the representatives of the Timber Trade Federation being the president (Mr. George H. Lindsey-Renton) and Messrs. Howard Burton, A. Farquharson, R. B. Vick, J. H. Cattley (May and Hassell), William Goff (Messers. Ltd.). After a general exchange of views, our contemporary, "Timber," reports, a draft standard specification was approved and will in due course be submitted at a proposed conference between the Institute of British Architects, the Timber Trade Federation, and the Institute of Builders.

MASONRY RESERVOIR DAMS.

In a paper on "Masonry Reservoir Dams," read at the annual meeting of the Institution of Municipal and County Engineers, Mr. F. C. Uren endeavoured to show that intricate calculations for the design of masonry dams are unnecessary.

To the French engineers, MM. Sazilly, Graeffe, and Delocre, he said, was due the honour of having first discovered the exact method of designing the typical dam. Before their investigations, the factors which influenced the dimensions of large dams were somewhat imperfectly known, and all those which had been built were trapezoidal in section. They had been designed to fulfil the condition that their moment of resistance to overturning should be two, three, or four times the resultant moment of the forces tending to overturn them. For a dam to overturn, however, the resultant pressure at the face would have to pass through the edge of the base, and, long before that pressure could reach that point, the toe of the dam would begin to crush; and in many cases (notably those in Spain) the dams were crushed by the enormous weight of masonry injudiciously placed.

The theory of Graeffe and Delocre was merely the application of mechanical principles to determine a form of dam in which the crushing pressure should not exceed proper limits on the down stream face when the reservoir was full, and on the up stream face when the reservoir was empty. Their methods of calculation, while extremely laborious, led to a form of dam more economical of material than the trapezoidal form previously adopted, that required indeed but one half of the masonry. To prove that they did not merely deal with theory they erected from the formulæ they expounded several dams which startled the engineering world by their boldness; among them were the well-known dams of Ban, Chartrain, De la Terrasse, and the Furens. The last, compared with the Gileppe dam, near Vervier, which had a section two and a half times as large as it need have had, was remarkably watertight. There was no leakage on the outside, although the dam had to sustain a head of water 150 ft. high.

Following Sazilly and Delocre, Sir Guilford Molesworth undertook to devise some simpler formulæ which would give an approximation to the results of the French engineers. His formula gave results in accordance with that important condition

laid down by eminent mathematicians and engineers as essential in all structures of this kind—that there should be no tension in the dam—and this law necessitated the resultant pressure reservoir full and empty falling within the middle third of the section. Since MM. Graeffe and Delocre investigated the problem, at least thirty high masonry dams had been built, and amongst those there were only two, as far as the author knew, in which Molesworth's form was widely departed from. The first of these was the Gileppe dam already mentioned; the other was the well-known Vyrnwy dam, which also had a section considerably greater than a purely rational section.

Experience and consideration, however, had convinced the author that the real danger of failure in a dam built of proper materials on a suitable foundation did not lie in the danger of crushing of the materials (the resistance of which was far greater than had been supposed), but in that of percolation or shearing, and that the dimensions sufficient to guard against these two dangers would amply suffice to meet that of crushing; so that elaborate calculations of the resistance to the latter were waste of labour. If the following simple rules were observed by those designing a masonry dam nothing more was really needed, for they would be found to give results so nearly accurate that they might be adopted without risk of error:

(1) Under no circumstances whatever should there be any risk of tension on either face.

(2) The total area of the section at any depth x should not be less than $x^2/3$. Of course, for convenience of construction and resistance to shocks, it must not be much more than this in the upper part.

(3) The offset from the vertical line to the outer face should be $7-10x$ up to 100 ft. in depth, and $1-15 \times x^{3/2}$ over 100 ft.

(4) As to the offset from vertical line to inner face, the face should be vertical from 0 to 40; 1 in 20 from 40 to 80; 1 in 10 from 80 to 120; $x/20$ from 120, 160, and so on.

Masonry dams were, of course, very costly as compared with earth embankments—where the latter would cost £100,000, a similar dam in masonry would cost about £250,000—but they were indispensable where risk of failure must be avoided at all costs. Probably the attention of engineers in designing dams in cases where economy was a matter of prime importance would be more and more directed to those which were curved in plan. Many such have been built of recent years, especially in New South Wales, where considerable economy of cross-section had been obtained by horizontal curvature. In these cases, however, the whole dam had been on one curve, with its abutments secured in the rocky sides of the gorge or valley where the water is impounded. Another and very interesting form of construction was that advocated and carried out with success by Captain A. H. Garrett, R.E., and also (independently) by M. Gaudard of Lausanne, where the dam consisted of a series of horizontal arches abutting against horizontal piers, long enough and strong enough to resist water pressures. This form of design might be said to represent the last word, so far, that science had had to say on the subject, though the application of reinforced concrete might possibly introduce still greater economy. Dams of this nature had been constructed in other countries, but all these, he believed, were for power only.

FIRE PREVENTION NOTES.

Once again it becomes our painful duty to chronicle an appalling loss of life from fire in the City of London. On Tuesday evening, July 23rd, a fire broke out on the top of a factory and warehouse in Moor Lane, not far from Moorgate Street Station, and in one of the most congested areas within the City of London. So narrow are the streets and alleys in this district, so tall and inaccessible are the buildings, and so frequent and extensive have been the fires hereabout, that it has got to be known as "London's fire-danger zone." London, it is sometimes said, "is not, strictly speaking, a manufacturing city." Possibly it is not, in comparison with the great manufacturing towns of the North. But while it has no large textile factories, it harbours innumerable small industries, several of which may be carried on independently in the same large building, and some of them evidently of a highly dangerous character in respect to risk from fire; so that the position to which we have often found occasion to refer, of one tenant being largely at the mercy of another, is greatly accentuated; any particular tenant being likely to suffer at the hands not only of his next-door neighbour, of the neighbour over the way—often a ridiculously narrow way—or of the neighbour at the rear, but also particularly of the next-floor neighbour, upper or lower, who may happen to follow a dangerous trade.

Commonly, as we have seen in many recent examples, the fire breaks out in an upper storey—very often the topmost—for the obvious reason that specially dangerous trades are usually relegated to this position in consideration that fire ascends, and that consequently a fire in an upper storey is more easily confined to its point of origin than a fire on the ground floor. The theory is sound enough, no doubt, with respect to the fabric; but what of the risk to human life? For clearly it is much more difficult to escape from an upper storey than from the ground floor. The fire in Moor Lane occurred in a workshop consisting of two rooms in the two top floors of a five-storey building. "In the front room" (we quote from the "Times" account), "the windows of which look on to Moor Lane, fourteen girls and four men were employed. They were engaged in the making of coloured Christmas cards in which celluloid and other inflammable materials were being used. At twenty minutes past six o'clock, shortly before the time the employees were to stop work for the day, fire broke out in the front room.

The room was instantly in a blaze. All the girls and men in this room rushed at once to the stairs, and escaped into Moor Lane. It was among the girls in the back room, fifteen in number, that the casualties occurred. To reach the stairway they had to pass through the front room, now a mass of flames. A few burst through and got to the staircase, with their hair and clothes alight. Some of the others were so panic-stricken that they appear to have made no attempt to escape. Six or seven of them got out through the window at the back of a parapet overlooking a well or small yard in the centre of the block of buildings. Four jumped from the parapet into the well, a distance of 50 or 60 ft. In an effort to save the others, a plank was run out from the window of an adjoining

place of business to the parapet, and one girl managed to cross it, but another who followed lost her balance and fell into the yard."

Accounts of fires written immediately after the event are, of course, always to be received with caution, and a close approximation to accuracy in the details can only be reached as a result of careful inquiry at the inquest. The one fact about which, unhappily, there can be no room for doubt is that as a result of this fire eight young women lost their lives. The firemen were promptly on the scene and, it is said, succeeded in extinguishing the fire "in a few minutes." Surprisingly little damage was done to the building. "Not a pane of glass was broken in its frontage in Moor Lane." Whether or not the means of escape had been considered to be effective may perhaps come out at the inquest, which is being held at the time of writing. Obviously they were not so, even though the utmost ingenuity and wisdom had been exercised in the effort to make them so; for these poor women lost their lives. Steps could be, and ought to be, taken to render such disasters impossible. But even reasonable immunity from such terrible catastrophes cannot be ensured until the public are better educated on the subject. There has been recently a storm of protest, by interested traders, against an attempt by the London County Council to put an end to such risks in another part of London; and let it be remembered that the Council can do nothing drastic unless it receives the support of humane and enlightened public opinion.

As to the origin of the fire in Moor Lane, it is not fair to repeat the conjectures that were hastily written for the daily papers. It seems certain, however, that celluloid was the essential factor in the outbreak, and it becomes a serious question whether its storage or its use in such situations should in any circumstances be any longer permitted. At home and abroad this material has been the origin of many fires, and has caused many deaths. If its application or its storage in crowded cities is to be tolerated at all, there should be the strictest official supervision of the conditions. Fire-prevention construction, and liberal means of escape, might render its use comparatively safe, but the true policy is to banish it altogether from congested areas, and to insist that it should be kept in remote, isolated, and specially constructed buildings, preferably of one storey, and in any case with indisputably adequate means of escape. The plank incident in the narrative of the Moor Lane fire suggests that it would be advisable to insist on the provision, in the upper storeys of tall buildings, of a simple form of drawbridge or gangway, to stretch between the windows of adjacent properties in the case of emergency. It should be light enough to be easily handled, and should be constructed of fire-resisting materials. Some form of simple handrail is, of course, essential, as well as means of clamping the gangway in position. It is said that one poor girl lost her life in the attempt to cross the plank, and that the one who was saved by its means was at first deterred from making the attempt because she noticed that the plank was shifting. The use of such supplementary means of escape as that suggested should be compulsory.

Tests of Fire-Resisting Doors and Shutters.

The British Fire Prevention Committee have just issued a pamphlet entitled "The Fire Resistance of Doors and Shutters: Being Tabulated Results of Fire Tests Conducted by the Committee," compiled by Edwin O. Sachs, architect, and Ellis Marsland, district surveyor. There is a classification of doors and shutters tested according to the "universal standards" of fire resistance, as affording full, partial, or temporary protection, and the results of fifty-eight tests are tabulated in four folding sheets. It is explained that "temporary" protection implies resistance against fire for at least three-quarters of an hour; "partial" protection resistance against a fierce fire for at least an hour and a half; "full" protection, resistance against a fierce fire for at least two hours and a half. The tests, which are fully illustrated, include many varieties of doors and shutters, and the effects are in each case carefully recorded. "Full protection" was obtained by eight doors of special construction; "partial protection" by ten doors, among which are two that are respectively described as "double deal" and "double oak." The former consisted of two doors, four-panelled, bead and butt both sides, with solid panels hung in one opening until space between, the thickness being one inch and seven-eighths, height 7 ft., width 3 ft., superficial area 21 sq. ft. The inner door began to fall sixty-five minutes after the gas was lighted, and the whole fell in the ensuing five minutes. The outer door was burnt through in sixty-eight minutes, and the outer began to fall 101 minutes after the gas was lighted, falling in the next five minutes. The oak doors were of exactly similar dimensions to the deal doors, and were constructed in the same way. The inner door began to fall in seventy-six minutes, and the whole fell in the ensuing nine minutes. In each case the test lasted for fifteen minutes longer than the standard. Evidently, therefore, there is much virtue in carefully constructed doors of deal or of oak; but, of course, the specially devised fire-resisting doors are in a class by themselves, and offer much more effectual resistance under a more severe test. The publication is issued from 8, Waterloo Place, Pall Mall, S.W.

At the final test in the first annual escape drill *Smartest Fire-competition*, held at the *Escape Teams*, chief station of the London Fire Brigade, in Southwark Bridge Road, the competing teams, the survivors of an entry of eighteen, were Knightsbridge, Headquarters (No. 1 team), and Poplar, Knightsbridge eventually winning in the two events by five seconds, the Headquarters team coming second. Several members of the County Council were present, and the display was thoroughly realistic. The first of the tests was with the escapes, and within forty-one seconds of the alarm, the Headquarters team had a jet of water pouring into the building. The Knightsbridge team took forty-three seconds, and the Poplar team fifty-five. The second test was with hook ladders on a four-storey building. When the fourth-storey window was reached, the hose had to be hauled up by a light line and brought into play. The times from the alarm were: Knightsbridge, 1 min. 37 sec.; Headquarters, 1 min. 44 sec.; and Poplar, 1 min. 57 sec. A display of Swedish drill was given by members of the brigade, and also a demonstration in the use of smoke helmets.

THE INTERCHANGEABLE SHOP-
FRONT.

A wholly novel form of shop-front construction has been introduced by Messrs. E. Pollard and Co., of 29, Clerkenwell Road, E.C. It consists of two standardised units—a shop-front and a shop-door—which may be interchanged and set out in a wide variety of positions. Every style of shop-front, including the island and the arcade types, may be imitated by using only these two parts in combination

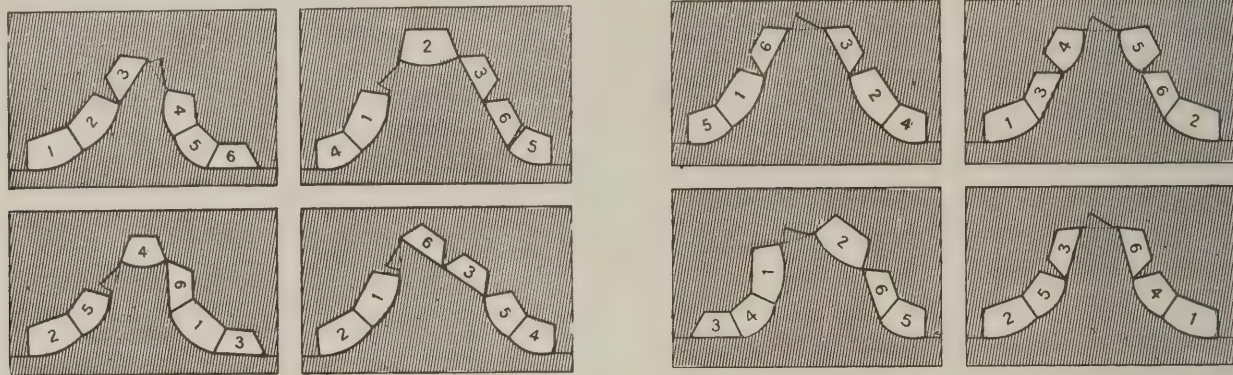
built shop-front of the same class. Messrs. Pollard and Co. have erected at their works a full-size model interchangeable front which may be inspected on request.

LEGAL.

Granite a Mineral under the Finance Act.

The Scottish Court of Session has just disposed of a stated case in appeal between Wm. Roger Paton, of Grandhome, Woodside, Aberdeen, and the Commissioners of

through the alleged negligence of the defendants at Snow Hill Station on December 29th.—It appeared that structural alterations were in progress at Snow Hill Birmingham, and when passing down a slope to leave the station the plaintiff slipped and fell, fracturing his knee-cap. Pneumonia and pleurisy followed, and he also suffered from neurasthenia as a consequence of the shock. He alleged that the slope was wet after rain, and greasy. Albert Thomas Butler, architect, of Dudley, stated that he had examined the scene of the accident. It was laid down by the



Some idea of the diversity of front obtainable by the adoption of this system may be gathered from the accompanying plans. The base of the shop front unit is mounted on a stoutly-built carriage of timber, which runs on four large bearing rollers. According to individual requirements, this carriage may be faced with polished Cuba mahogany, Austrian oak, marble, or granite, of various colours, or gun-metal. The units may be easily transposed by two people into alternative positions without any disarrangement of the display within. Each unit interlocks with the next, and, being bolted into position, immovability and weather-tightness are ensured. The door units are provided with stout moulded frames of either mahogany or oak, fitted with a glazed door and ventilating fanlight over. Arrangement is made for the bolting of the door frame between and on to any of the shop-front sections placed beside it. No part of the interchangeable shop-front is a fixture, and beyond the natural restriction of space there is no limit to the number of units that may be employed. Each part being on rollers, any desired change in the conformation of the shop-front may be made with the utmost facility. The interchangeable front, it is important to note, remains a tenant's fixture and may be removed at the expiration of a tenancy. Though always appearing complete, actually it is never finished; as a business expands and additional space for window display becomes necessary, more units may be added, the front gradually receding deeper into the shop. Each unit is despatched from the works of Messrs. Pollard and Co., complete and ready for instant erection. When a front of the ordinary fixed type has to be displaced, the work involved in the alteration may easily be performed by a local builder. Each section can, if necessary, be sent out fitted with an electric light installation. The height from floor to window base is 1 ft. 10 in., and to the lower edge of the transom 8 ft. 4 in. The position of the transom, however, may be arranged to suit the height of the shop ceiling. The cost of the interchangeable shop-front is stated to be much below that of the ordinary in-

land Revenue. The Commissioners found that Mr. Paton was liable in mineral rights duty in respect of granite quarried from two quarries at Persley. Mr. Paton appealed to the referee on the ground that granite was not a mineral, it being part of the ordinary composition of the soil of the district, and its presence not being rare and exceptional. Mr. David Rankine, the referee, decided that granite was a mineral under the meaning of the Finance Act, 1910. Lord Johnston said that the same considerations which the Court had indicated in dealing with the felsite necessarily applied to this case also, and the judgment would be in the same form.

The Grading of Slopes.

At Birmingham Assizes last week, before Mr. Justice Horridge, Mr. Edward Clayton Downing, of The Firs, Brierley Mill, brought an action against the Great Western Railway Company to recover damages for personal injuries received

London Building By-laws that a slope used by people visiting places of entertainment should not be more than 1 in 10. In the witness's opinion a slope of 1 in 4.35, as in the present case, was dangerous unless there were strips across to prevent people from slipping or handrails about 3 ft. apart so that users of the slope could hold them with each hand. In the case of this particular slope the boards had been laid in such a way that they were perfectly smooth.—For the defence, one of the chief points urged was that the plaintiff did not fall on the wooden slope, as he alleged, but on a stone slope adjoining. In regard to the statement that the slope was wet and slippery owing to the wet brought into the station by umbrellas and the mud on people's boots, he called evidence from the Meteorological Station in Birmingham to prove that there was practically no rain on that day.—The jury found for the plaintiff damages £450, and judgment was entered accordingly.



SHOP-FRONT ON THE INTERCHANGEABLE SYSTEM.

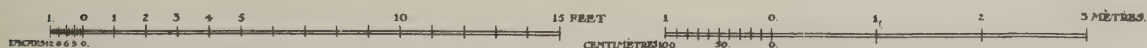


The authorship of this fine building has been attributed by some to Inigo Jones, by others to John Webb ; but perhaps the actual architect was Christopher Kempster, one of Wren's clerks at St. Paul's. The upper part is now used as an art school, a purpose for which it is admirably adapted.

ABINGDON OLD TOWN HALL.

[illegible]

SECTION:



MEASURED AND DRAWN BY HUBERT SAVAGE.

THE CHEMICAL ANALYSIS OF PORTLAND CEMENT.

In our issue of July 24th, p. 104, we published a portion of the standard specifications for Portland cement which have been adopted by the United States Government. This included preliminary general observations, and the regulations for standard methods of testing. We now give, from the same source, the approved methods of chemical analysis.

II. Methods of Chemical Analysis.

Prefatory Note.—While it may not be necessary to follow the standard method of analysis in routine tests when only a general indication of composition is desired, this method, including all precautions as stated in footnotes and italicised text, must always be followed when the results are to be used as the basis for rejection, or when an accurate knowledge of composition is desired.

The standard method can only yield accurate results in the hands of a careful and experienced analyst when all precautions are properly observed, and even under these conditions the results obtained in the determinations of magnesia (MgO), sulphuric anhydride (SO_3), "loss on ignition" and "insoluble residue" may be ± 0.10 per cent. in error, while in general results reported for magnesia tend to be too high. Under less favourable conditions the errors may be of much greater magnitude.

It is desired to emphasise these points so as to prevent rejection of material if the specified limits are exceeded by less than 0.10 per cent.

Chemical Analysis.

Method suggested for the analysis of lime-stones, raw mixtures, and Portland cement by the Committee on Uniformity in Technical Analysis with the advice of W. F. Hillebrand.¹

Report of Sub-committee (New York Section Society of Chemical Industry) on Uniformity in Analysis of Materials for the Portland Cement Industry.

(All matter printed in italics, both in text and footnotes, has been added during the preparation of this circular at the suggestion and with the approval of W. F. Hillebrand, with special application to the analysis of Portland cement.)

Solution.—One-half gram² of the finely powdered substance is to be weighed out, and, if a limestone or unburned mixture, strongly ignited in a covered platinum crucible over a strong blast for fifteen minutes, or longer if the blast is not powerful enough to effect complete conversion to a cement in this time. It is then transferred to an evaporating dish, preferably of platinum for the sake of delicacy in evaporation, moistened with enough water to prevent lumping, 5 to 10 cc. of strong HCl added and digested with the aid of gentle heat and agitation until solution is completed. Solution may be aided by light pressure with the flattened end of a glass rod.³ The solution is then evaporated to dryness, as far as this may be possible on the bath.

Silica (SiO_2).—The residue, without further heating, is treated at first with

5 to 10 cc. of strong HCl, which is then diluted to half strength or less, or upon the residue may be poured at once a larger volume of acid of half strength. The dish is then covered and digestion allowed to go on for ten minutes on the bath, after which the solution is filtered and the separated silica washed thoroughly with water. The filtrate is again evaporated to dryness, the residue without further heating taken up with acid and water and the small amount of silica it contains separated on another filter paper. The papers containing the residue are transferred wet to a weighed platinum crucible, dried, ignited first over a Bunsen burner until the carbon of the filter is completely consumed, and finally over the blast for fifteen minutes and checked by a further blasting for ten minutes or to constant weight.

The silica, if great accuracy is desired, is treated in the crucible with about 10 cc. of HF and 4 drops⁴ H_2SO_4 and evaporated over a low flame to complete dryness. The small residue is finally blasted for a minute or two, cooled, and weighed. The difference between this weight and the weight previously obtained gives the amount of silica.⁵

Alumina and Iron (Al_2O_3 and Fe_2O_3).—The filtrate, about 250 cc. from the second evaporation for SiO_2 , is made alkaline with NH_4OH after adding HCl, if need be, to insure a total of 10 to 15 cc. of strong acid,⁶ and boiled to expel excess of NH_3 , or until there is but a faint odour of it, and the precipitated iron and aluminum hydroxides, after settling, are washed once by decantation and slightly on the filter. Setting aside the filtrate, the precipitate is dissolved in hot dilute HCl, the solution passing into the beaker in which the precipitation was made. The aluminum and iron are then reprecipitated by NH_4OH ,⁶ boiled and the second precipitate collected and washed on the filter used in the first instance. The filter paper with the precipitate is then placed in a weighed platinum crucible (the one containing the residue from the silica if this was corrected by hydrofluoric acid treatment), the paper burned off, and the precipitate ignited and finally blasted five minutes, with care to prevent reduction, cooled and weighed as $Al_2O_3 + Fe_2O_3$.⁷

Iron (Fe_2O_3).—The combined iron and aluminum oxides are fused in a platinum crucible at a very low temperature with about 3 to 4 grams of $KHSO_4$, or, better, $NaHSO_4$,⁸ the melt taken up with so much dilute H_2SO_4 that there shall be no less than 5 grams absolute acid and

enough water to effect solution on heating. The solution is then evaporated and eventually heated till acid fumes come off copiously. After cooling and redissolving in water the small amount of silica is filtered out, weighed and corrected by HF and H_2SO_4 .⁹ The filtrate is reduced by zinc, or preferably by hydrogen sulphide, boiling out the excess of the latter afterwards while passing CO_2 through the flask, and titrated with permanganate.¹⁰

The strength of the permanganate solution should not be greater than 0.0040 g. Fe_2O_3 per cc.

Lime (CaO).—To the combined filtrate from the $Al_2O_3 + Fe_2O_3$ precipitate a few drops of NH_4OH are added, and the solution brought to boiling. To the boiling solution 20 cc. of a saturated solution of ammonium oxalate is added, and the boiling continued until the precipitated CaC_2O_4 assumes a well-defined granular form. It is then allowed to stand for twenty minutes, or until the precipitate has settled, and then filtered and washed. The precipitate and filter are placed wet in a platinum crucible, and the paper is burned off over a small flame of a Bunsen burner. It is then ignited, redissolved in HCl, and the solution made up to 100 cc. with water. Ammonia is added in slight excess, and the liquid is boiled. If a small amount of Al_2O_3 separates, this is filtered out, weighed, and the amount added to that found in the first determination, when greater accuracy is desired. The lime is then reprecipitated by ammonium oxalate, allowed to stand until settled, filtered and washed,¹¹ weighed as oxide after ignition, and blasted in a covered crucible to constant weight, or determined with dilute standard permanganate.¹²

Magnesia (MgO).—The combined filtrates from the calcium precipitates are acidified with HCl and concentrated on the steam bath to about 150 cc., 10 cc. of saturated solution of $Na(NH_4)HPO_4$ is added, and the solution boiled for several minutes. It is then removed from the flame and cooled by placing the beaker in ice water. After cooling, NH_4OH is added, drop by drop, with constant stirring until the crystalline ammonium-magnesium orthophosphate begins to form, and then in moderate excess, the stirring being continued for several minutes. It is then set aside for several hours in a cool atmosphere and filtered. The precipitate is redissolved in hot dilute HCl, the solution made up to about 100 cc., 1 cc. of saturated solution of $Na(NH_4)HPO_4$ added, and ammonia, drop by drop, with constant stirring until the precipitate is again formed as described, and the ammonia is in moderate excess. It is then allowed to stand for about two hours,¹³ when it is filtered on a paper or a Gooch crucible, ignited, cooled, and weighed as $Mg_2P_2O_7$.

The pyrophosphate invariably contains calcium which can be determined as follows:

Dissolve the ignited pyrophosphate in a little dilute H_2SO_4 and add enough absolute alcohol to make about 90 to 95 per cent. of the final volume. After several hours collect

⁴ 5 cc HF and 2 drops H_2SO_4 are sufficient.

⁵ For ordinary control in the plant laboratory this correction may, perhaps, be neglected; the double evaporation never. The silica so found does not represent quite all in the material under analysis; a little has passed into the filtrate. Account should be taken of a possible loss in weight of the crucible itself, if the blast is very powerful.

⁶ And 2 or 3 cc of bromine water. Bromine water is used for the purpose of collecting practically all the manganese here, instead of allowing it to distribute among several different precipitates.

⁷ This precipitate contains TiO_2 , P_2O_5 , Mn_2O_4 .

⁸ Or the corresponding pyrosulphates which are less troublesome and more effective than the acid sulphates.

⁹ This correction of Al_2O_3 , Fe_2O_3 for silica should not be made when the HF correction of the main silica has been omitted, unless that silica was obtained by only one evaporation and filtration. After two evaporations and filtrations 1 to 2 mg of SiO_2 are still to be found with the Al_2O_3 , Fe_2O_3 .

¹⁰ In this way only is the influence of titanium to be avoided and a correct result obtained for iron.

¹¹ The volume of wash water should not be too large; vide Hillebrand. United States Geological Survey, Bull. 422, p. 119.

¹² The accuracy of this method admits of criticism, but its convenience and rapidity demand its insertion.

¹³ A paper filter should always be used if the pyrophosphate is to be corrected for contaminations.

¹ The original method was reported in the Journal of the Society for Chemical Industry, vol. 21, p. 30, but the method was subsequently modified by the committee and the above text practically conforms to that in the Engineering Record, vol. 48, p. 49; Engineering News, vol. 50, p. 60.

² If a limestone 0.75 gram should be used, the approximate equipment of 0.5 gram of cement.

³ If anything remains undecomposed it should be separated, fused with a little Na_2CO_3 , dissolved and added to the original solution. Of course a small amount of separated nongelatinous silica is not to be mistaken for undecomposed matter.

the small and sometimes almost invisible precipitate of calcium sulphate on a small filter and wash it free of phosphoric acid with alcohol. Dry the filter and extract from it the precipitate by a few cubic centimeters of hot water acidulated with HCl. Make this solution alkaline with ammonia, throw in a few crystals of ammonium oxalate and continue heating till a precipitate becomes visible. After an hour filter, wash, and ignite to calcium oxide. Its weight, averaging perhaps 0.5 mg., is to be added to that of the lime already found and subtracted as tricalcium phosphate (not pyrophosphate) from that of the magnesium pyrophosphate.

In order to determine approximately the iron and aluminum present the following procedure may be followed:—

Evaporate the alcoholic filtrate from the calcium sulphate and heat the residue to destroy separated organic matter. Take the residue up with a little HCl and water and when dissolved add a drop of bromine water. Add ammonia till the magnesia is again precipitated and let stand for an hour. Decant most of the supernatant liquid and add slowly, drop by drop, acetic acid till all fine-grained matter has dissolved. Usually there will remain a little flocculent matter which is likely to consist in greater part or wholly of phosphates of iron and aluminum (and manganese if this last was not removed by bromine and ammonia as in the section on Alumina and Iron Oxides). After ignition the precipitate often shows a reddish colour. Unless great care is exercised this separation will lead to erroneous results, either by inclusion of magnesium with the impurities as weighed or by loss of these in consequence of using too much acetic acid.

Alkalies (K_2O and Na_2O).—For the determination of the alkalies, the well-known method of Professor J. Lawrence Smith is to be followed, either with or without the addition of $CaCO_3$ with NH_4Cl .

Sulphuric Anhydride Acid (SO_3).—One gram of the substance is dissolved in 15 cc. (5 cc.) of HCl, and 45 cc. water filtered, and the residue washed thoroughly.¹⁴

The solution is made up to 250 cc. in a beaker and boiled. To the boiling solution 10 cc. of a saturated solution of $BaCl_2$ ¹⁵ is added slowly, drop by drop, from a pipette, and the boiling continued until the precipitate is well formed, or digestion on the steam bath may be substituted for the boiling. It is then set aside overnight, or for a few hours, filtered, ignited, and weighed as $BaSO_4$.

Total Sulphur.—One gram of the material is weighed out in a large platinum crucible and fused with Na_2CO_3 and a little KNO_3 , being careful to avoid contamination from sulphur in the gases from source of heat. This may be done by fitting the crucible in a hole in an asbestos board.

The melt is treated in the crucible with boiling water and the liquid poured into a tall narrow beaker and more hot water added until the mass is disintegrated. The solution is then filtered. The filtrate contained in a No. 4 beaker is to be acidulated with HCl and made up to 250 cc. with distilled water, boiled, the sulphur precipitate as $BaSO_4$, and allowed to stand overnight, or for a few hours.

The following procedure is in accordance with the recommendation of W. F. Hille-

brand in United States Geological Survey, Bulletin 422, page 227:—

In a platinum crucible mix 1 gram of the sample with one-half gram of sulphur-free sodium carbonate. Place the covered crucible in a hole in an asbestos board that is held in a somewhat inclined position and apply a blast flame upon the crucible below the asbestos for ten to fifteen minutes. Transfer the sintered mass to a beaker and cover with water. Cleanse the crucible with dilute hydrochloric acid and pour the solution into the beaker. Add more acid till decomposition is complete in the cold or on gently warming. Filter, wash with hot water, dilute to 150 to 200 cc., boil, and precipitate with barium chloride.

It should be borne in mind that by neither of the methods given is a barium sulphate obtained that is perfectly pure. Ferric (and if present alkali) sulphate, also barium chloride, contaminate it, and it is impossible to correct for them directly. The most convenient way to obtain a correction is by a blank with a solution containing sulphur and the other main constituents of the cement in approximately the amounts and proportions found in the test sample.

Loss on Ignition.—Half a gram of cement is to be weighed out in a (covered) platinum crucible, placed in a hole in an asbestos board so that about three-fifths of the crucible projects below, and blasted fifteen minutes, preferably with an inclined flame. The loss by weight, which is checked by a second blasting of five minutes, is the loss of ignition.

Recent investigations have shown that large errors in results are often due to the use of impure distilled water and reagents. The analyst should, therefore, test his distilled water by evaporation and his reagents by appropriate tests before proceeding with his work.

Insoluble Residue.—The insoluble residue 16 shall be determined on a 1-gram sample which is digested on the steam bath in hydrochloric acid of approximately 1.035 specific gravity, until the cement is dissolved. The residue is filtered, washed with hot water, and the filter paper contents digested on the steam bath in a 5 per cent. solution of sodium carbonate. The residue is then filtered, washed with hot water, then with hot hydrochloric acid, approximately of 1.035 specific gravity, and finally with hot water, then ignited and weighed. The quantity so obtained is the insoluble residue.

¹⁶ This determination was not considered by the Committee of the Society of Chemical Industry, and is reproduced from paragraph 19 of the United States Government specification for Portland cement.

It is feared that the new scheme for bringing the proposed Ostia Railway into Rome will do considerable damage to the buried remains of the Circus Maximus, which it had been hoped would some day have been excavated. The plan of the engineers is to substitute for the previous scheme of two tubes under the Palatine and Capitol a tunnel across the old Vicus Tuscus. This will also prevent the exploration of the Lupercal.



BIRMINGHAM COUNCIL-HOUSE EXTENSION: ENTRANCE ON CONGREVE STREET FRONT. H. V. ASHLEY AND WINTON NEWMAN, F.F.R.I.B.A., ARCHITECTS.

The opening of the rooms which have been added to the Birmingham Art Gallery, forming part of a larger scheme of extension, was recorded in last week's issue, page 90. The extensions are finely illustrated in the July number of the "Architectural Review," from which the above view is reproduced.

¹⁴ Evaporation to dryness is unnecessary unless gelatinous silica should have separated, and should never be performed on a bath heated by gas; vide Hillebrand; United States Geological Survey Bulletin 422, p. 198.

¹⁵ Ten per cent. solution is preferable to one that is saturated.

NATIONAL FEDERATION HALF-YEARLY MEETING.

The half-yearly meeting of the National Federation of Building Trades Employers of Great Britain and Ireland (secretary, Mr. A. G. White, Koh-i-Noor House, Kingsway, W.C.) is being held at Nottingham, this week (July 30, 31), under the presidency of Mr. James Wright, of Nottingham. The agenda is chiefly occupied with consideration of the Insurance Act and with valuations under the Finance Act. Upon the latter subject an important resolution is proposed. We hope to give, in our next issue, a summary of the proceedings.

FIRE TESTS OF FLOORS AND CASEMENTS.

The British Fire Prevention Committee commenced its two-day summer meeting on Wednesday last at its Regent's Park Testing Station, with some important high temperature fire tests on a reinforced concrete floor and on six sets of electro-zinc casements.

There was a large attendance of members and subscribers and a number of visitors, including Chief Officer Troje, representing the Prussian Fire Service Council, whilst the Admiralty, War Office, Home Office, and other Government Departments, as also the London County Council and several municipal and similar authorities, were represented by their principal officials concerned, together with a number of railway and insurance companies.

The members and visitors were received by the Earl of Lonsborough, K.C.V.O., Henry Tanner, C.B. (H.M. Office of Works), Sir James Szlumper, M.Inst.C.E., Mr. Edwin O. Sachs, F.R.S.Ed. (executive chairman), Mr. Horace Folker, F.A.I. (hon. treasurer), and other members of Council, and the testing operations were conducted by strong sub-committees under the general direction of Mr. Ellis Marsland (general hon. secretary), and Mr. Max Clarke, F.R.I.B.A.

The arrangement of the reinforced concrete floor test has awakened considerable interest, as it is the first occasion on which a floor of this type reinforced solely with mesh reinforcement (a triangle mesh) was under official review, and the question of whether for such floor with mesh reinforcements a lesser amount of protective covering would suffice had been much discussed from the fire point of view.

Again, the arrangement of the test with electro-glazing of the so-called "Chadrac" type has awakened great interest, seeing that the "Copperlite" type, which was recently tested, obtained a very high record, and that other makers are also testing to the same high standard.

At the Thursday's proceedings practically the same members and visitors attended as on the previous day, but the testing arrangements were under the direction of Mr. Ellis Marsland, district surveyor, and Mr. Bertram Chatterton, M.Inst.C.E., respectively. The tests were with three sets of electro-glazing casements of the Luxfer type, followed by a test with a double door constructed of reinforced concrete, this latter hailing from Belgium, where it had been conducted to the specifications of the chairman of the Local Government Committee and had been sent over for report.

The arrangement of holding tests on consecutive days was considered a

great success, inasmuch as it made it more convenient for members and representatives of authorities in the provinces specially visiting London, and it is to be anticipated that this arrangement will be followed in future years. As to the official results of the tests, the usual illustrated reports will be issued in due course directly after the vacation.

It may be of general interest to note that the next official tests will be with a series of non-inflammable celluloid—i.e., Cellit.

R.I.B.A FINAL EXAMINATIONS.

The following addition is made to the list of names of candidates for the Final Examination whose designs submitted under the various subjects of the Revised Testimonies of Study have been approved by the Board: Subjects II. (b) and III. (a), Mr. F. Radcliff.

A NEW CARRON CATALOGUE.

A new catalogue of heating apparatus has just been issued by the Carron Co., of Carron, Stirlingshire. Printed on stout art paper, it comprises 164 pages of illustrations and descriptive text. The catalogue is divided into two sections, the first dealing with apparatus heated by coal, coke, and steam, and the second with apparatus heated by gas and electricity. Every variety of appliance, from a baker's oven to a bain-marie, will be found fully illustrated and described, the chief dimensions being given, together with price or prices if the apparatus is made in more than one size or finish. Some very large installations of cooking apparatus at colleges and other institutions are shown, the various component parts being illustrated in detail throughout the list. The examples included are those which are at present in general use, but the Carron Co. are prepared to quote and specify for any style, size, or combination of heating apparatus, from an ordinary range to the most elaborate installation, and they are always pleased to make suggestions and to submit drawings and estimates free of charge. The list is thoroughly comprehensive, and no architect should be without a copy.

THE LONDON ASSOCIATION OF MASTER DECORATORS: ANNUAL MEETING.

The fourth annual general meeting of the London Society of Master Decorators was held at the Holborn Restaurant on July 8th, Mr. John Anderson (president) in the chair.

In the annual report it is stated that certain members of the committee were called upon to give evidence before the White Lead Commission, and the burden of their evidence was in accordance with the views expressed at the general meeting held in October last, to the effect that as no suitable substitute had been found, it was decided to recommend its use under reasonable regulations, but the recent rise in price makes it advisable again to give this matter most careful attention.

It is proposed during the coming winter to make arrangements with kindred associations for an interchange of views through the reading of papers by their members, and due notice will be given of the programme when arranged. The committee have also in hand the proposed issue of a workman's card of employment, and

although doubt has been expressed as to whether the trade unions would favour such a scheme, a sub-committee has been appointed to go fully into the matter.

The ever-recurring question of trade discounts has been constantly before the committee during the year, and in many cases where members have reported cases of excessive discounts being allowed, redress has been obtained.

The solicitors report that during the year they have recovered £2,028 10s. 7d. on behalf of members of the association, making together with previous collections a total sum of £5,906 10s. 7d.

It has been decided to postpone the annual dinner, and to open the winter session during September or October with that function.

The President explained that the suggestion with regard to increasing the membership was to engage a traveller, who was going about London, to act as canvasser to visit the members of the trade. It was thought that an able man calling upon decorators would be able to bring the advantages of the association before prospective members. It was proposed to pay the canvasser by commission.

The President said with regard to the negotiations that had taken place between the committee and the London County Council, a report had been circulated to the members with regard to the Education Committee's work in connection with improvers and apprentices. One of the questions asked by the London County Council was whether the members of the association would be prepared to take boys who had passed three years in a trade technical school in learning the groundwork of a painter, and the council wanted an answer to that question so that they might have an idea of the *bona fides* of the various firms who offered to give employment. Naturally it would not be much good taking a promise from a man who had only started on the previous day, and was only employing two or three men. The association would not do anything in the matter unless the County Council recognised the decorator, and allowed the representatives of the association to have some voice in the tuition at the school, because it was necessary that the boys should be of some commercial value to those who employed them. With regard to the question of the Insurance Act, no answer had been received from the authorities to the letter sent through the Master Builders' Association, who were still pressing the matter forward. Before taking any active steps, the committee thought it wise to wait until the Act was in force, because it was felt that, whatever was done, there would be no repeal or suspension of the Act, as much larger associations had been opposing the whole thing with little or no result. When concrete questions cropped up it would be possible to go to the Commissioners with some real grievances with reference to the Trades Disputes Act. A memorial had been sent to Lord Claud Hamilton, who had the matter in hand, but the Prime Minister would not have anything to do with it. With regard to the White Lead Commission, he thought it was an extraordinary thing that while the inquiry was going on with a view to prohibit or regulate the use of white lead, the white-lead merchants were raising their prices so greatly. The National Association of House Painters had sent a letter pointing out how unwise it was that prices should be raised to such a great extent. The members were no doubt aware that for several years many white-lead manufacturers had been carrying on their business at a very small profit, if any profit

at all, and probably agreed that it was quite reasonable prices should be raised to allow of a fair profit, but he had heard on very good authority that present prices not only assured a reasonable profit, but a very high profit.

With regard to the proposed issue of a workman's card of employment, Mr. C. E. Wilkinson said the matter had been deferred until the Insurance Bill came through, as it was anticipated that perhaps the insurance card might be a means to the end in view, but he found that no use could be made of that, as the stamps could only be cancelled by a date, the signature of a firm not being allowed.

Mr. Jno. Anderson was re-elected president, and Mr. Fred Dakin vice-president, and the members nominated for the vacancies on the committee were duly elected.

Mr. Wallace, builder and decorator, Woodford Green, was elected to membership.

The President said, with regard to the apprenticeship system, he understood that in Scotland and in some parts of the North of England it was very different from what it was or had been in London. The system in vogue there appeared to be apprenticeship without indentures. A young fellow was employed in the shop and agreed to remain there, and no other shop in the vicinity would give him employment unless he had to leave the shop he was working at for some very good reason. It was a very peculiar form of apprenticeship, and he thought one that would be difficult to carry out in London. He knew of no apprentices in the painting trade in London, and he hoped the time would come when apprenticeship would be revived in some form or other. The scheme of the London County Council suggested that boys who were willing to enter the painting trade should be encouraged to join the trade schools after they had finished their ordinary schooling and go through a preliminary education of a painter for at least three years, which would give them a most excellent foundation and make them very acceptable to the employers. After they had served three years in a trade school it was suggested they should be taken on by various employers, who would agree to employ them for three years, more or less, as improvers. He thought that would produce very much better mechanics in the painting trade than existed at present. There was an opinion amongst the public in London, and he was afraid even some master builders held the same view, that anybody could paint, and he hoped that opinion would be destroyed in the future, and the committee was striving to that end.

Mr. Andrews said one difficulty had struck him with regard to the Unemployment Section of the Insurance Act. When a man left his employment he took his employment book with him, and, under the Act, he was supposed to deposit that employment book with the nearest Labour Exchange. In his own case the nearest Labour Exchange happened to be about five or six miles away, and he did not see how it was possible to start a man on a job in the morning until he had gone back for his book, which might mean the loss of half a day. He had put that matter to the Labour Exchange superintendent, who said the difficulty might be got over by giving a man a receipt for his book, the receipt being accepted as a statement that the man possessed such a book. He had also put the further question that, supposing a master had misjudged a man and wanted to get rid of him at the end of the day, how could the book be stamped when

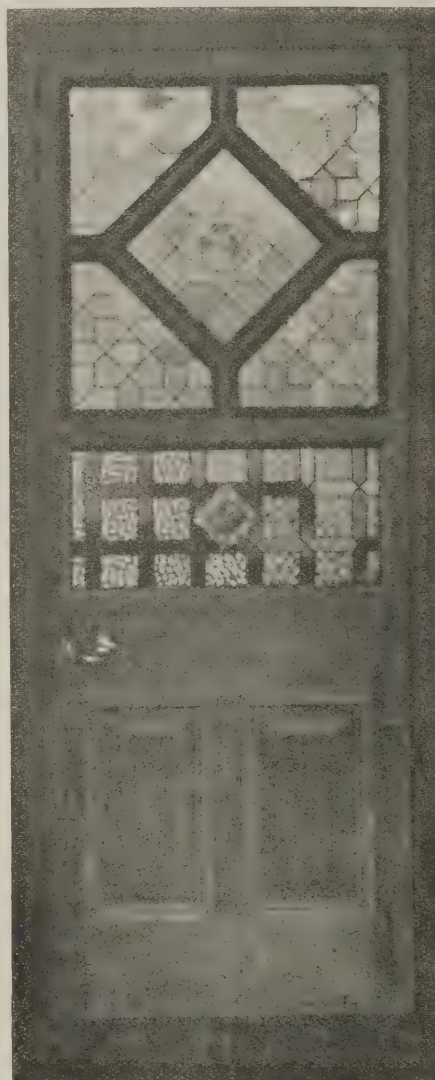
the man was paid his money? but he had received no answer to that inquiry yet.

The meeting concluded with a vote of thanks to the officers, the president responding.

FIRE-RESISTING GLAZING.

The British Luxfer System.

To prevent the spread of fire by flames leaping from one building to another, as well as to prevent the fanning of fire within the building in which it originates, fire-



LUXFER FIRE-RESISTING GLAZING IN A DOOR.

resisting glazing is essential. On an outbreak of fire, ordinary windows are ruined immediately. Then the flames leap out and attack the windows of adjacent premises, which at once give way and admit the flames. Fire-resisting glazing has smothered many a fire by keeping out the

air which would have fed it, and in still more cases it has protected adjacent premises from attack. For the Luxfer electro-glazed window it is claimed that it will resist heat until the glass begins to melt, and therefore its use is recommended not only in all exterior windows, but also in all partitions, so that it may confine fires to single rooms as well as to separate premises. It should be used as a screen round every lift shaft, entirely enclosing the lift from top to bottom, and thus isolating the various floors through which the shaft pierces. Stairways may be similarly protected. The British Luxfer Prism Syndicate, 16, Hill Street, Finsbury, E.C., issue an interesting illustrated pamphlet showing the various forms and applications of their fire-resisting glazing, which has successfully emerged from many tests, accidental and official, at home and abroad. The illustration here reproduced shows the adaptation of several different forms of Luxfer fire-resisting glazing to a door. The glass may be stained, plain, or prismatic.

Pilkington's Wired Glass.

The photographic view given below is valuable as affording actual and positive proof of the efficacy of fire-resisting glass. The roof illustrated is that of a large straw warehouse at St. Helens, Lancs. The roof of this building was covered with slates, except where skylights were introduced. A fire broke out in this warehouse, and it was as fierce a fire as burning straw can make. The effect on the slates is shown in the illustration—they have utterly disappeared. The skylights, however, remained in position, suffering but little damage beyond cracking and slight sagging. This would be a sufficient proof of the fire-resisting value of Messrs. Pilkington's wired glass, but this same fire produced an experience that fairly clinches the argument. Close to the straw warehouse there is an extensive general warehouse. Against its windows the fierce flames were driven by a strong south-westerly gale. If these windows had been filled with ordinary glass the flames must have gained access to the larger building, and would then have undoubtedly destroyed it. But the glazing consisted of Pilkington's wired glass, which successfully resisted the flames, and thus a great disaster was averted. In re-roofing the building in which the fire occurred, slates have been discarded, and the whole roof covered with the admirably fire-resisting wired glass.

Further particulars may be obtained from Messrs. Pilkington Bros., Ltd., St. Helens.

A scheme has been formulated for the amalgamation of the Dublin Brick and Tile Co., Ltd., the Dolphin's Barn Brick and Tile Co., Ltd., and the Rathnew Brick Co., Ltd., under the title of the Dublin Brick Co., Ltd., with a capital of £50,000.



After a fierce fire, the slates had disappeared, but the skylight of wired glass remained intact as seen; and an adjacent warehouse was saved by its wire-glass windows.

PILKINGTON'S WIRED GLASS.

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STONE VASE ON GATE PIER IN "THE WILDERNESS,"
HAMPTON COURT PALACE.

This vase, of Wren date, is of Portland stone. It has weathered remarkably well, the carving still being sharp.



HOLLAND HOUSE, KENSINGTON: NORTH FRONT.

The name of John Thorpe is largely associated with this Jacobean mansion, which, though extensively altered within, retains its original character on the outside. Interest is centred on the house just now in view of the rumour that has been circulated as to a proposal to cut up the grounds for building purposes.

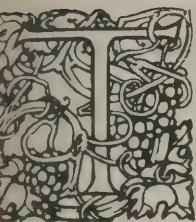
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CAXTON HOUSE, WESTMINSTER.

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The Opportunities of New Delhi.



THE recent discussion in Parliament on Indian policy was diversified by what seldom occurs in a political discussion in this country, viz., a digression on the subject of town-planning. What is to be done architecturally with the new city of Delhi must be an object of great interest, as a practical essay in the laying out of cities. We have here the opportunity, which so seldom occurs in modern times, of actually planning and laying out a new city as we please. Town-planning schemes are generally concerned only with making the best of an existing city; altering its lines of street where desirable and possible; opening out new vistas and squares, etc.; operations always very much hampered by vested rights and the necessity for purchasing and demolishing existing buildings. The opportunity for the laying out of a city from its commencement, without any consideration for existing properties and rights, can only occur in modern England in the case of what are called "garden cities" on a small scale, on ground previously unbuilt on. The personal founding of cities at the pleasure of the founder was a kind of opportunity only afforded in ancient times, when cities were small and defined by walls, and could be planned as concentrated architectural plans, much as we can plan a large town hall or law courts in the present day. But here is a case of a large city, to act as the capital of an Empire, to be planned and designed not at the order of an individual, but by the order of the Imperial Government. It is an opportunity such as has never before occurred in modern times, in Europe at all events. The nearest modern parallel to it is the creation of Washington, where a grand plan certainly was drawn up, but was not proceeded with at the time, and is only just now being developed by degrees. In Europe we must go back to Carlsruhe to find an example of a deliberately planned new city; and that was only on a rather small scale.

It is satisfactory to find that there is to be no attempt to engraft the New Delhi on the ancient city. That would have meant, in the first place, the probable disturbance of ancient buildings of great interest, or the alteration of their surroundings and consequently of their effect. And it would probably have meant, also, very unsatisfactory hygienic conditions for the new residential buildings. The site of an Eastern city which has stood for centuries would almost require burning out, as central London was burned out in the Great Fire, to cleanse it of accumulated impurities in the soil. The new Delhi is to be separated from old Delhi by a belt of park and not less than a thousand yards in width. With such a scheme there ought to be fine opportunities for combined architectural and park effect. The laying-out of this park ought to have direct reference to the placing of the most prominent buildings in the new city. There is the opportunity, for instance, for a great axial avenue

connecting one of the prominent buildings of the new city with, possibly, one of the great architectural monuments of the old city. At all events, if the ground does not admit of that, there should be a great avenue leading up to one of the most important and central Government buildings. As examples of this kind of effect we might cite the great vista obtained in Paris from the centre of the Louvre Court to the Arc de Triomphe, and the great avenue which is now, we believe, being formed at Washington—which has at all events been laid down on paper, leading up to the Washington monument as its culminating feature. Or there may be an opportunity for the effect of radiating avenues, which was such a favourite one with the eighteenth century designers of parks and gardens. This is the class of effect which ought to be kept in mind in designing the new Delhi park and city. A mere belt of park with no special design would be the throwing away of a great opportunity.

It is stated that the Report of the Committee and the plans for the new city are before long to be exhibited in that "tea-room" of the House of Commons which seems to be the accepted place for the exhibition of architectural plans of public schemes. Until these plans are seen one cannot of course say anything except as to general principles; but a scheme of such importance ought, before anything is definitely settled, to be exhibited in some more public place, more generally accessible, than the tea-room of the House of Commons. Exhibition there is all very well for members of Parliament, and they perhaps have the right to the first inspection; but members of Parliament as a body have not shown themselves very apt in understanding architectural schemes; some of the greatest mistakes that have been made in English public works have passed the verdict of the tea-room; and the members of our Parliament who really understand such subjects may probably be counted on the fingers of one hand. The scheme ought to be submitted to a larger public than that.

We may take it that matters have not gone so far yet as the design of any buildings, but that only the general plan of the city has been considered. When the subject gets into the stage of architectural design there will arise the question of architectural style, on which there will probably be many differences of opinion. The true course to take, we believe, will be to accept the revived Renaissance of the present day; to carry out the new city in the style of architecture which would probably now be adopted for new Government buildings in a European city, but with such modifications as to treatment of windows, and the use of recessed walls and colonnades to keep out the heat, as would be necessary to protect the interior of buildings against tropical heat. Renaissance detail arose in a bright and warm climate; it is suited to get its best effect in strong sunlight; only a new effect would be given, to some extent, by the recessing and the window treatment necessary for protection against heat. The adoption of the style we usually employ now in European cities would also be the most truthful expression of the situation—of the fact that this is a capital

built by a European Government upon Indian soil. Any attempt to use what may be called indigenous styles—in other words, to manufacture Oriental architecture for the occasion, is foredoomed to failure; it would be a mere architectural pose—with no reality in it.

One more suggestion we would make; the architectural design for the principal Government buildings at new Delhi ought to be put up to public competition among all English architects; a sketch competition first, and a certain number selected from that for the final test.

The National Trust.

THE Seventeenth Annual Report of the "National Trust for Places of Historic Interest or Natural Beauty" states that the work of the Trust is becoming year by year more widely known and appreciated (which we know to be perfectly true); that a large number of properties have been acquired during the year, and that further important gifts have been made by donors who have recognised the value of the work already accomplished. Among the sites secured by the Trust during the past year are Minchinhampton Common in the Cotswolds; Blakeney Point on the Norfolk coast, "nearly 1,000 acres of wind-swept dunes and shingle beaches"; and the wood between Stybarrow crag and Ullswater, in connection with which it is mentioned that a lady owner gave up the privilege of building there in order that the property might pass to the Trust. Thus the National Trust not only does good itself, but seems to produce goodness in others. Among other things acquired during the year is the old Priest's House at Muchelney, where the necessary repairs to keep the house from decay without impairing its character have been carried out, and a suitable tenant has been found. The Trust has also secured the Chantry Chapel at Buckingham, for which they require, however, £100 to put it in a proper state of repair. The resignation is announced of Mr. Nigel Bond, who has been secretary to the Trust since its formation, and the appointment of Mr. S. H. Hamer as his successor.

The Street Traffic Problem.

THE lamentable death of Mr. Thomas Walter Wilson, the artist who, in stepping back to avoid a motor-car was knocked down by a taxi-cab, called forth from the coroner, at the subsequent inquest, the observation that the crossing between Marlborough House and the corner of Cleveland Row was one of the most dangerous spots in London: "There were seven lines of traffic there, and he thought a refuge should be placed in the middle of the road." "If," he continued, "motor traffic is to be allowed in London, there must be more refuges, and there was plenty of room at this particular spot." The jury added a rider to their verdict of "Accidental death" to the effect that some further safeguard ought to be provided for pedestrians at this point in Pall Mall. Such recommendations by coroner and jury are—like, alas, the occasions for them—so common that nobody takes much notice of them. Yet the vast increase in the number of street accidents caused by the introduction of motor traffic shows that the new conditions have taken us unawares, and that it is the plain duty of the authorities to meet the new conditions at any cost. The coroner's phrase, "If motor traffic is to be allowed," is even more futile than the pious aspirations for street refuges—is, in fact, absolutely meaningless, and is symptomatic of the abject state of helplessness into which we are betrayed by the sudden incursion of these engines of destruction upon our old-fashioned and out-of-date highways. Refuges are no doubt necessary; but they are hardly the last word in remedial measures. Indeed, it is to be feared that they sometimes tempt people to destruction, by tacitly inviting them to make a dash which they would not otherwise attempt; and the spectacle of frightened people marooned on these

islands amidst a sea of traffic is in itself a rather caustic commentary on the way we are governed. Often these island refuges are the site of underground conveniences which render them obnoxious to more than half the population; and, by the way, it may be noted that to place such conveniences at the intersection of several bus thoroughfares is to ensure a fairly steady supply of accident cases for the hospitals. The approach to such places should not be through the traffic, at the peril of life and limb, as, for instance, at Bridge Street, in the City of London, but from the footpath, as at Westminster, where, however, a too severely economical arrangement combines a subway with conveniences for both sexes, which is undesirable. As regards underground street crossings in general, it is said that the huge cost of providing and maintaining them is hardly justified, so little use being made of them. Rather than lose half a minute or so in going up and down the steps, the hurrying passenger prefers to take the risk involved in dodging the traffic. Nor is this slight saving of time the only object. The spice of danger is, to the active, rather an attraction; and there is a sort of petty vanity that tempts the nimble and intrepid to a dexterous threading of the maze. Such feats, however, are made a hundredfold more hazardous by mechanical traction. The speed of a horse could be subconsciously calculated and allowed for; that of a motor is incalculable by the pedestrian, and it introduces the extremely confusing factor of a mixture of rates of progress. In avoiding one, the pedestrian, like the unfortunate artist who met his death in Pall Mall, is run down by another, and the perpetual menace of horrible accident will sooner or later compel some drastic solution of the traffic problem. The street of the future—and the not remote future—will provide reasonable safety for the pedestrian, either by giving him raised terraces—as several architects have suggested in their perhaps too ambitious designs; to say nothing of the illustrations to the ingenious speculations of Mr. H. G. Wells—or by confining motors to specially constructed roads, bridged, perhaps, with not uncomely viaducts. In the meanwhile, "refuges" are but makeshift expedients, and underground crossings, incalculable as they are to the timid and the infirm, cannot though they be multiplied exceedingly, be regarded as anything more than a tentative solution of a really serious problem, which, though utilitarian in essence, has nevertheless its æsthetic aspects, which, in any well considered scheme, will be duly observed. There is no reason at all why shelters and underground crossings, or any other means of contributing to the safety and convenience of the public, should be baldly utilitarian or uncompromisingly ugly. But if they are to abandon this character, and are to beautify instead of disfigure the streets, the architect must be called into consultation much more freely than hitherto. The engineer may or may not be essential to the underground burrowing, but the intervention of the architect is necessary if the streets are to be saved from unsightly arrangements.

The Park Lane Building Scheme.

THE idea, about which there is some confusion of affirmation and denial, of building shops in Park Lane seems a kind of sacrilege, considering how long the very name of that road has been regarded as almost typical of the highest class of London residential property. That indignity, it appears, however, is at all events to be spared to the owners of Park Lane residences; indeed, the attempt to carry it out might have led to a kind of insurrection of the upper classes. But this corner of London is nevertheless, unless the scheme can be prevented, to be architecturally spoiled, both in the present and in regard to future possibilities. For just to the east of the junction of Park Lane and Oxford Street, there is at present an open garden space in front of the line of houses. It has been for long a cherished idea with those who wish to see the improvement of

London that a space the width of this should be continued westward and added to the roadway all along the Bayswater Road, making it a kind of boulevard; the space taken from the Park would hardly be missed, and the addition to the beauty of the road would be very great. There is now proposed to be interposed a huge block of buildings which will stop out the view from some of the neighbouring houses, and interfere entirely with the full carrying out of the boulevard improvement above described. A certain small proportion of land is to be thrown into the public road; but these small concessions do not alter the fact that the corner near the Marble Arch is to be spoiled for the public.

Gresham College.

THE foundation stones of the new Gresham College, at the corner of Gresham Street and Basinghall Street, E.C., have been ceremonially laid; the foundations having been already put up by Messrs. Cubitt and Co. The superstructure, however, will be put up by Messrs. Holloway Brothers, who will work to the joint designs of Mr. Sydney Perks, F.R.I.B.A., City Surveyor, and Mr. Dendy Watney, surveyor to the Mercers' Company. Property adjacent to the old building having been acquired at a cost of £20,800, an additional area of 220 sq. ft. has become available, and the building to be erected will provide accommodation for about 500 persons, as well as for offices which will probably be let at a rental of about £1,200 a year. The old building formerly had accommodated about 330 persons, but the gallery for 130 had to be closed on the advice of the fire experts, who eventually condemned the gangways and staircases; whereupon, in 1910, the building was closed on the interests of public safety. The old building, designed by George Smith, was a dull but not undignified piece of classicism, and its entrance portico in the Corinthian Order will be missed as a not unfavourable example of the mid-Victorian method; for the building was completed in 1843, having cost rather more than £7,000. The lectures—on astronomy, physics, law, divinity, rhetoric, geometry, and music—to which it gave house-room, are, of course, of much earlier date, having been founded by Sir Thomas Gresham in 1575; and they were first delivered in 1597 in Gresham's mansion, which, with almshouses and gardens, extended from Bishopsgate Street westward into Broad Street. In this mansion the Royal Society originated and held its first meetings; but the building was taken down in 1768 to make room for the Excise Office. The lectures were then held in a building on the south-east side of the old Royal Exchange until Gresham College was erected.

Municipal Works Departments.

THE municipal works department question has been revived at Glasgow, where, at a meeting of the Corporation, a Bailie moved: "That it be remitted to a special committee to consider and report on the expediency of instituting in the public interest a works department of the Corporation, which committee shall be charged with the duty of co-ordinating the works of the various departments, and, where practicable, the committee to submit tenders for the work of the various departments of the Corporation to be carried out by its own workmen in the direct pay of the Corporation." In supporting the motion, the Bailie laid stress on the want of co-ordination among the seven departments of the Corporation having statutory powers over the streets. Streets, he said, were pulled up by one department, and immediately after they had completed their work another department came along and turned up the streets again. He desired to see work so co-ordinated that one department should not undo or interfere with that of another; but co-ordination could only be secured by means of a works department. The motion was lost, thirty votes being cast against it, and seventeen in its favour. Some

of those who opposed the motion admitted the want of co-ordination, but thought that the establishment of a works department would provide a preposterous sort of remedy. The utter failure of municipal works departments elsewhere, and in particular what was described as the "farfical example" of the London County Council, were cited as conclusive evidence "that it was practically impossible for a public body to do work as cheaply as other people could do it." This seems to be the universal experience, and it is fortunate that opposition to a bad principle should have received such strong support from its signal failures in practice. For its economic aspect is not its worst. Certainly municipal trading seems to create a peculiarly enervating atmosphere which pervades all its operations, rendering them unduly expensive; but it is seen in a still more unfavourable light in its demoralisation of the workers, whom it withdraws from private employment, setting up a more or less fallacious standard of conditions of labour, and in its exclusion of private traders from legitimate opportunities for business enterprise. The whole question, however, has been thoroughly threshed out, and the system of municipal works departments has become so entirely discredited in the process as to render the Glasgow motion in its favour somewhat of an anachronism, and its defeat was a foregone conclusion.

The Maisons-Laffitte Museum.

M. LEÓN BÉRARD, Under-Secretary of State for Fine Arts, presided on July 26 at the official inauguration of the new museum at Maisons-Laffitte, which next day was thrown open to the public. Maisons-Laffitte, the château built by Mansard in the middle of the seventeenth century for René de Longueil, Superintendent of Finance, and acquired by the State in 1905, has been restored and furnished by the Department of Fine Arts. This beautiful building, one of the finest "historical monuments" in France, with its sculptures, carvings, tapestries, and pictures, lies about 10½ miles from Paris, near the forest of Saint Germain, and in its park is the racecourse which has made its name familiar to multitudes for whom the museum is not likely to prove any additional attraction. The mansion, as the Paris correspondent of the "Times" reminds us, has in its time received within its doors many distinguished guests. In April, 1651, De Longueil entertained the youthful Louis XIV. and his Court. Voltaire was a frequent visitor, and is reputed to have written at Maisons his tragedy "Mariamne," and to have read to an eminent company his still unpublished "Henriade." He also nearly died of smallpox in the house. In 1777, the Comte d'Artois bought it for rather over £80,000. After the Revolution it was sold as the property of the nation to one Lanchère, who, in 1804, resold it to Marshal Lannes. During his tenure Napoleon stayed in the château. On the fall of the Empire the property was bought in 1818 by the banker Laffitte, who sold most of the art treasures which had been accumulating for two centuries. He also began the process of cutting up the park into residential sites, which was continued by subsequent owners. Even the château itself was in danger of destruction until it was happily acquired by the State.

Craftsmanship and Commercialism.

WE were shown, the other day, a beautiful piece of wrought-iron work, sound in design and perfect in workmanship. It was wholly charming, and delighted the eye at first sight. But the most surprising thing about it was that it was fresh from the anvil, and smelt of the forge. Yet plainly it had been wrought by a man whose heart was in his work, and who had fulfilled to the letter the dogma of William Morris that in order to be an artist a man must needs have joy of his handicraft. We are told, however, with wearisome iteration, that that kind of craftsman is extinct, that pride



TITHE BARN, ABBESS'S BARTON, BRADFORD-ON-AVON.

of workmanship is a thing of the past. It may be admitted, however, that the evidences of artistic craftsmanship are comparatively rare; else why should this particular piece of ironwork excite our special wonder? Decadence there is; but what is the cause of it? We put this question to the gentleman who had shown us so convincing an example to the contrary, and his answer was emphatic, if not conclusive. He vehemently affirmed that the modern craftsman is equal to any reasonable demand that can be made upon his skill, and has in no way fallen from the high estate of his forerunners. We should be glad to accept without reserve so comfortable a doctrine, but must confess to some difficulty in swallowing it whole. We have heard it so often before. The architect, in common with all other artists, makes the same emphatic protest; and there is doubtless much truth in the complaint that the artist may not give of his best because the public offers him no sufficient inducement to put it forth. By the existing system he is cheapened and hurried—conditions that are deadly inimical to art; and the spirit of commercialism, of which the higgling of the market-place and the impatience of delay are the most obvious manifestations, condemn him to fetters from which few have the force to break loose. Nevertheless, it is exhilarating to be reassured, as by the example in question, that art-craftsmanship is by no means dead, and is not everywhere fast asleep.

The Assessor Question.

MANY times in these columns we have had to call attention to the need of most careful consideration being given to the appointment of assessors for architectural competitions. Until architects, through their societies, took this matter up with local authorities, the latter seemed to be under the impression that it was no very difficult task to make a selection, and, as a consequence, there was often no mention in the conditions that any assessor was to be nominated. But in recent years local authorities have been made to see that all this is quite unacceptable to architects, the most reputable of whom will only compete when they know that their work is to be judged by somebody who is competent to undertake the task. This matter is recalled to our mind by the fact that the Town-Planning Committee of the Huddersfield Corporation are advertising a competition for designs for the lay-out of certain local districts. A deposit of £2 is required with the application for particulars and is returnable only on receipt of a design. But in the advertisement there is no mention of an assessor. Whether the promise of one is included in the conditions we cannot say. We are informed by a correspondent, however, that a civil engineer is to be appointed in this capacity, in which case we should say that architects might raise a protest.

BRADFORD-ON-AVON.

GREAT BRADFORD, picturesquely situated between Salisbury and Bath, is a town of unusual architectural interest. In England there are at least six places which bear the same descriptive name; and as the "broad ford" in the present case is over the Wiltshire Avon, the river which flows through Bath and Bristol, it is usually distinguished from the greater Bradford in Yorkshire, and the rest, as Bradford-on-Avon. It lies at the southern extremity of a well-wooded but narrow and winding valley, which opens at Bathford almost at right angles from the more spacious valley in which Bath itself is situated. The whole region is remarkable for the quarries of oolite which abound in all directions—a stone familiar all over England and far beyond her boundaries. Long before "ashlar" became generally known, the happy inhabitants of the neighbouring towns and villages found this most admirable building material ready to hand. Ashlar, it may be remarked, is supposed to take its name from Ashley, in Box, close to Bradford. At Bradford are found two churches, both close together and near to the Avon, one being more than usually interesting as a parish church, while the other is the type of English church of the seventh century—the type and sole perfect example extant. For houses of note the vicinity has become famous. Corsham Court, South Wraxhall Manor, Great Chalfield, and Hazlebury, with many others, are in easy reach. In the town itself, besides half a dozen fine examples of stately mansions of the seventeenth and eighteenth centuries, we find one gem of the thirteenth, which it would be difficult to match elsewhere—the house of John Hall.

Bradford has never attained to the municipal rank of Basingdon or Stamford, but in other respects its early history is that of numberless English towns. First it was under the rule of a great monastic house; later it was influenced by the immigration of aliens fleeing from foreign persecution. The antiquity of the town is attested by its mention in the Saxon Chronicle. As early as the wars by which Roman Britain was changed into England we find the village under the hill and the adjacent ford objects of importance to the conquerors.

Of the Norman period the relics are very scanty. Several windows in the church preserve the round arches, but they were apparently rebuilt during the restoration of 1861, which, however, afflicted Bradford less than some other places—less than Corsham, for example, or St. John's old church at Castle Combe. Before the greater part of the parish church of the Holy Trinity had been built the manor of Bradford and much besides had passed into the hands of the Abbess of Shaftesbury. It was given to her in 1001 by King Ethelred, and his grant shows that for people further west Bradford might be reckoned a fortress against the Danes. It was no doubt fortified to some extent, but the forest in front, the river close at hand, and the steep cliff behind must have formed its principal defences. The most tangible relic of the abbey rule is, strange to say, a long way in front of these safeguards; but when the picturesque barn and barn-tower with the Gothic doorways and windows, and the pointed arches of the little meadow bridge were built, the terror of the Danes had died out for many centuries. The buildings are in a late phase of Perpendicular, and are probably new very shortly before the Reformation.

One other relic of that period is the Town Bridge with its chapel. The pointed arches at the western end date, probably, like the rest, before the bridge was widened. The little building over the third pier is described as a chapel. We know it was used as a "lock-up" in the seventeenth and eighteenth centuries, and, indeed, the stonework of the upper part looks as if it must date from the Stuart period. But the corbelling of the base is of the same date as the pointed arches below; and we have

the testimony of Aubrey, writing in the reign of Charles II., that a chapel stood here "as at Bath, for masse."

The Bath chapel has long disappeared, but part at least of the chapel at Bradford remains. The view of the town from the St. Margaret's end of the bridge is remarkably fine. It rises in terraces to the summit of a steep hill, and is full of picturesque features, such as towers and gables; but it lacks the colour that would have been imparted by a few brick fronts or a few tiled roofs. Everything is in a monotone of grey, the weathered oolite being used for walls and roofs, gables, and chimneys alike.

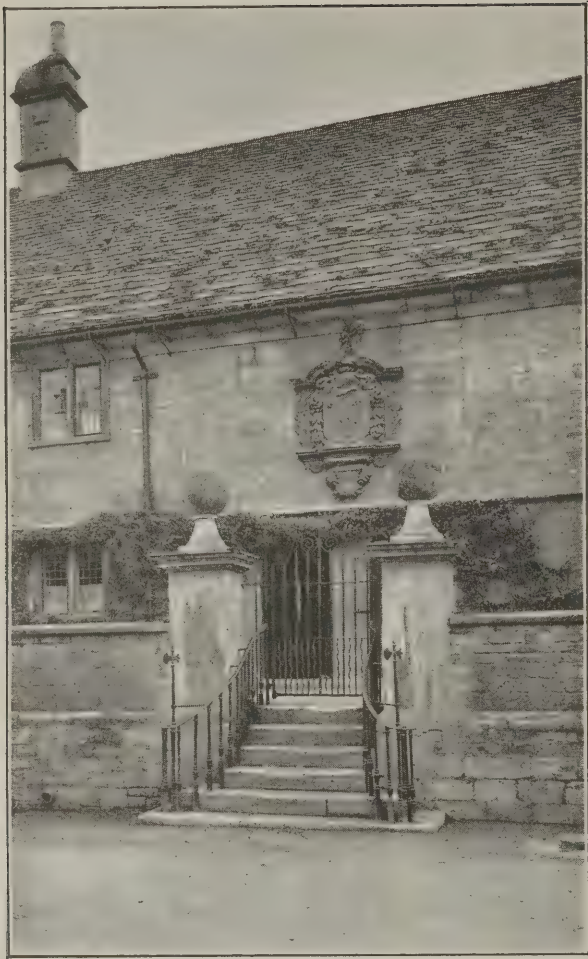
From the bridge the Market Place is reached. As in all old market towns, there is evidence both of encroachments on the open space and of special settlements by stall-holders. The first of the surrounding streets is, as at Aylesbury, the money-changers', or Silver Street. Next is the Shambles. But the smallness of these two shows how confined the mediæval town must have been.

There are three houses of some pretensions in the Shambles—two with well-carved bargeboards, and one with a pointed doorway which marks the site of the old Market House, the front of which faced towards the south—all of the fifteenth century. The introduction of foreign looms, which came about first under the Tudors, had a great effect on the architecture of Bradford. This is to be noted in some of the most picturesque groups, such as that on the slope north of the Market Place or the so-called "Priory," part of which is Elizabethan, if not older; it was the residence of one of the principal cloth-working families.

The almshouse near the railway station was built in 1700; it is a pleasing specimen of the "Queen Anne" style. Endowed by one of the Halls, it has the "battle axe" which figured in his arms carved over the door and repeated in the ironwork. It is to a much earlier member of the Hall family that Bradford owes the building of the famous Kingston House. It stands well out of the town to the east, near a large factory, but surrounded by gardens and terraces. Presumably it was begun about 1590, but no record exists giving the exact date.



THE SAXON CHAPEL OF ST. LAURENCE, BRADFORD-ON-AVON



HALL'S ALMSHOUSE, BRADFORD-ON-AVON: DETAIL.

The first John Hall died in 1597, and the work must have been completed by his son, another John, who died in 1631. It was probably a third if not a fourth John who built the almshouse. Kingston House, in 1848, had become very dilapidated. It was then bought by Mr. Stephen Moulton, who, during the course of ten years, restored it with care and discrimination. Kingston House, it will be remembered, was selected as the type of an English dwelling, and reproduced at the last great exhibition at Paris.

The Saxon chapel of St. Laurence seems to share with Kingston House a larger amount of attention from visitors than any other buildings in Bradford-on-Avon. In 1864 it consisted of a small school and two cottage dwellings in a little lane on the north side of the parish church. The tall ridge of a stone roof rose above the surrounding tenements. By the untiring exertions of Canon Jones, the late vicar, many improvements were made round about, and the garth on which the chapel now stands was formed. No doubt it has suffered a little in the process—but very little: and Bradford, and indeed England, has gained a most important addition to the scanty number of relics of the oldest style of English architecture. Points of similarity will be noted between the arcaded panelling on the outside and the arcading around the chancel of Wing Church, in Buckinghamshire; but Wing appears much later, and begins to approximate to Norman. The Bradford chapel owes its preservation to the care of the builder, the stones being of a large size and very carefully fitted. They must also have been chosen with a full knowledge of the properties of the oolite as to weathering and decay. One thing is proved by this curious building, and that is that the Saxon architect was not new to his work; and though all domestic and ecclesiastical structures from his hand have perished in the course of ages, it is obvious that when he found good stone he was able to make skilful use of it. The chapel was built, accord-

ing to William of Malmesbury, in or before 708 by Aldhelm, the second abbot of that great house. It consists of a porch 9 ft. 11 in. by 10 ft. 5 in.; a nave 25 ft. 2 in. by 13 ft. 2 in. by 25 ft. 3 in. high; and a chancel 13 ft. 2 in. by 10 ft.

The church dedicated to the Holy Trinity stands between St. Laurence's Chapel and the river. It has a spire and transepts, and the nave has a north aisle. The most interesting monument in the church is situated on the north wall of the chancel; it is a typical example in what we call the "Queen Anne" style. Set up a few months before the reign of that monarch began, namely in 1701, it commemorates one Charles Steward. He is represented in the costume of Charles II. The sculpture and design generally are very superior to contemporary monuments in Westminster Abbey—those, for instance, of the Duke of Newcastle or Sir Cloudesley Shovel.

Another worthy is but slenderly commemorated. In the vestry, an engraving without name or date recalls the well-known features of Gainsborough's "Parish Clerk," in the National Gallery. The history of Edward Orpin, who died in his own house at Bradford in 1781, is variously related, most accounts making him a friend of the great artist who was living and painting at No. 22 in the Circus at Bath between 1760 and 1774. In 1866 Mr. Wiltshire, the descendant and successor of Gainsborough's friend, died at his house, Shockerwick, in Somersetshire, which lies a short distance east of Bathford on the Corsham road. It is divided from the county of Wilts by the little Box Brook, easily recognised in such pictures as "The Market Cart" or "The Watering Place." An iron bridge now spans the ford, but there are several views, such as that in "The Harvest Wagon" or "Cattle and Figures," which may be identified still in the varied scenery of the extensive park.

Though there is now a bridge at Bathford, in Gainsborough's time the ford over the Box, here as well as in Shockerwick Park, was constantly in use. It became the custom of the artist to spend the "week end" with his friend the carrier, Mr. Wiltshire, who always refused payment for conveying Gainsborough's pictures to London.

Orpin has another claim to attention. He was an architect, and seems both to have designed and built the pleasant house by the northern fence of the churchyard. The house is remarkably well proportioned, and shows from its complete contrast with the neighbouring Chantry House, and others of a similar pattern, that Orpin was more influenced by the great Kingston House at the southern end of the town than by the other mansions which in his day were being multiplied in Bradford. He bequeathed his house to the parish.

A HOLIDAY COMPETITION.

THE holiday competition would seem to be much in the forefront just at present, and there is no reason why the architect should be out of it. A few in the profession are accustomed to devote a great deal of time to competitions for architectural designs. It will come as a change, therefore, to have a competition of a much lighter character. Architects frequently take a camera with them when away on a holiday, and are thus able to secure a record of many interesting buildings, or details of buildings, which are quite outside the ordinary class of illustrations: perhaps a little Renaissance house which has passed almost unnoticed, a piece of good ironwork, a fine old barn, or a delightful example of a wayside cottage. Photographs of a hundred or one such things are taken, but never published. We therefore, invite such photographs, and will pay a fee of 5s. or 10s. 6d. (according to the value we place on them) for each which we reproduce. Prints should, if possible, be on glossy paper. It is optional whether they are mounted or not, but the name and address of the sender must appear on the back of each. The photograph must have been taken this year.



THE NORMAN BRIDGE AND CHAPEL, BRADFORD-ON-AVON.

LIBRARY
OF THE
UNITED STATES

LEGAL.

Builders' Hoardings and Footway Rights.

At the Old Street Police Court, London, Mr. C., Mr. Leicester heard a summons against Messrs. Perry Brothers, builders, Whitecross Street, St. Luke's, for neglecting to take out a licence for hoarding.—Mr. Ricketts, solicitor, supporting the summons on behalf of the Insbury Borough Council, said the defendants had occupied the whole width of a part of the pavement between New Charles Street and Cottage Lane, City Road, with a builders' hoarding, so causing the public to walk in the roadway. The defendants should have applied for a licence to build the hoarding, under the Metropolitan Management Act, which would have been granted, conditionally, on their undertaking to rail off a part of the roadway so as to enable the public to walk in security. The neglect to do this had caused great inconvenience and risk to the public. The hoarding was built on June 8th, and although the omission to apply for a licence was pointed out to the defendants, they did not apply until July 5th.—A penalty of £5 and 23s. costs was imposed.

What is Retention Money?

In the High Court of Justice, on July 1st, Mr. Justice Bankes heard the case of

the West Yorkshire Bank, Ltd., v. Isherwood Brothers, Ltd., which came up for trial pursuant to an order of Master Chitty dated March 13th, 1912.—Mr. Lowenthal, who appeared for the plaintiffs, said that the case raised a short point as to the meaning of the phrase "retention money" in a contract. The plaintiffs held moneys payable to one Crawford by the Kiveton Park Rural District Council in respect of certain sewage works constructed by Crawford for the council, and Isherwood Brothers had a charge on the retention money under the contract. The position therefore was that plaintiffs were entitled to all moneys payable under the contract except retention money. Counsel contended that "retention money" was a term of art, and meant money due to the contractor but retained by the employer as an indemnity against any defects of construction which might appear. The contract price was £10,250, and a clause in the conditions provided that it should be paid by instalments: the work to be measured monthly, and 80 per cent. of its value paid on the engineer's certificate. On certificate of completion a further sum of 15 per cent. was to be paid, and the balance six months after. Counsel contended that only 5 per cent. of the outstanding balance could be considered as retention money. "Money," he said, could only be "retained" when it was earned and due, but was not yet payable. Money payable on completion could not be

retention money, because it was payable at once.—The engineer-in-charge under Crawford's contract gave evidence to the effect that he had certified 5 per cent. as retention money, in accordance with regular practice.—For the defendants, Mr. McNaghten contended that here retention money meant any money for which work had been done, but payment of which might be deferred. That would include the whole 20 per cent.—Mr. Justice Bankes, in delivering judgment, said he did not think the word retention could apply to any money which had not become due. But, in view of the incorporated conditions of payment, he thought the contention that the 15 per cent. did not become due until the whole was completed was erroneous. Whatever the true construction of the contract, he was satisfied that in making the assignment Crawford intended to include the whole 20 per cent. as retention money, and was understood by the assignees as doing so.—Judgment on the issue was therefore for the defendants, with costs.—A stay was granted.

Guildford Cottages Saved.

Arrangements have been made with the Corporation of Guildford by which the widening in the Farnham Road, which would have involved the destruction of some picturesque old cottages, has been abandoned.



"KINGSTON HOUSE," BRADFORD-ON-AVON.

(See page 139.)

COMPETITIONS.

New Baths, King's Heath, Birmingham.

The award of the assessor, Mr. A. N. Bromley, of Nottingham, in regard to the plans for the projected baths at King's Heath, places Messrs. Crouch, Butler, and Savage, of Newhall Street, Birmingham, first, and the premiums go to Messrs. S. N. Cooke and W. N. Twist, Colmore Row, and Messrs. Round and Weaver, Newhall Street.

Oldham Town Planning.

Mrs. Lees, a member of the Oldham Housing and Town Planning Committee, has generously offered to provide the prize-money to be awarded in a competition which she suggested for the preparation of a town-planning scheme for Oldham. It was decided to accept the offer, and to invite schemes from architects and surveyors practising in the municipal borough of Oldham. The prizes offered for the three selected designs are £100, £50, and £25, and the plans are to be sent in by October 31st.

Official Residences at Delhi.

The Government of India intend to institute a competition for official residences at Delhi, the competition to be confined to architects residing in India.

New Children's Home, Barnet.

A competition, limited to ten selected architects, is proposed to be held for this building by the local Board of Guardians.

LIST OF COMPETITIONS OPEN.

AUGUST 30. SAXON SNELL PRIZE.—Fifty guineas, with medal, for essay on hospital construction. Apply, Sanitary Institute, 90, Buckingham Palace Road.

SEPTEMBER 1. MUNICIPAL OFFICES, GOOLE.—Premiums, £30 and £15. Particulars, Mr. R. Tyson, Council Offices.

SEPTEMBER 9. COUNCIL SCHOOL, CHORLEY.—The Education Committee of the Borough of Chorley invite designs for a Council School for about 500 children. Conditions (£2 2s., returnable) from John Mills, Town Clerk.

SEPTEMBER 30. NEW BUILDINGS, UNIVERSITY COLLEGE, DUBLIN.—The Governing Body of the University College, Dublin, invite architects to submit designs for new college buildings. Competition is limited to architects living and practising in Ireland. Mr. H. T. Hare, F.R.I.B.A., has been appointed the assessor. Applications, accompanied by a cheque for two guineas (returnable) to J. W. Bacon, M.A., Secretary and Bursar, 86, St. Stephen's Green, Dublin.

OCTOBER 1. KING EDWARD MONUMENT, OTTAWA.—Sketch models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

OCTOBER 29. EXTENSION OF MUNICIPAL BUILDINGS, GLASGOW.—The corporation invite preliminary sketch designs for an extension of their municipal buildings. From the sketches submitted, the authors of not more than five designs will be selected for a final competition, at an honorarium of one hundred guineas each. Mr. John J. Burnet, LL.D., A.R.S.A., is assessor. Conditions (one guinea, returnable) from J. Lindsay, Town Clerk, City Chambers, Glasgow.

OCTOBER 31. TOWN PLANNING, HUDDERSFIELD.—The Housing and Town Planning Committee of Huddersfield Corporation offer premiums of 100, 50, and 25

guineas for laying out certain areas. Conditions (two guineas, returnable) from K. F. Campbell, M.Inst.C.E., Borough Engineer, 1, Peel Street, Huddersfield.

JANUARY 1, 1913. MUNICIPAL BUILDINGS, RANGOON.—The committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars £1 (returnable) may be obtained from the London Agents, Messrs. Ogilvy, Gillanders, and Co., Sun Court, 67, Cornhill, E.C.

OBITUARY.

Mr. Thomas Binnie.

Mr. Thomas Binnie, a leading Scottish valuer and surveyor, has died at his residence in Park Gate, Glasgow, in his eighty-first year. Mr. Binnie, who succeeded his father in business, was engaged in a great many notable compensation and assessment cases, and he conducted the negotiations for the acquisition of many important properties. He had held office as chairman of the Scottish Committee of the Surveyors' Institution, and was a member of the Commission of Inquiry into the house-letting system in Glasgow. Mr. Binnie took a prominent part in Church affairs, notably with regard to the union between the Free and United Presbyterian bodies, and also the Livingstonia Mission.

SCHOOL OF ARCHITECTURE,
UNIVERSITY COLLEGE, LONDON.

The following awards have been made in the School of Architecture at University College, London:

The Donaldson Medal to Mr. Oliver Gaunt, the Carpenters' Company Traveling Studentship to Mr. S. Miller, the First Prize in the Advanced Design Class to Mr. W. G. Whincop, and the Second Prize to Mr. H. S. Taylor, the Prize for Measurements and Sketches also to Mr. H. S. Taylor.

In connection with the arrangements for the Carpenters' Company classes for next session, the classes in design will be continued on Mondays and Wednesdays, the visitors being Mr. Leonard Stokes and Mr. E. P. Warren.

Mr. W. H. Ward will give a course of ten public lectures on the French Renaissance.

BOND'S "CATHEDRALS OF
ENGLAND AND WALES."

It is for several reasons gratifying to find that Mr. Francis Bond's book on "The Cathedrals of England and Wales" has reached a fourth edition; the chief reason—which perhaps includes all the others—being that it thoroughly deserves its success, in spite of the few blemishes which, with the modesty of the true scholar, Mr. Bond unsparingly points out in his preface to the present edition. Former editions, he confesses, had "two grave defects." One was that there were no ground plans; and this, at least from the architectural point of view, was certainly a cardinal defect, for which this conscientious author does well to lash himself as with scorpions, although he has atoned handsomely by remedying an omission which, if we remember rightly, we did not fail to point out in noticing former editions. Another fault for which the

fruits meet for repentance are also offered was the adoption of Mr. Rickman's arrangement into four stereotyped building periods—Norman, Early English, Decorated, and Perpendicular. "In this volume the actual building periods are treated separately, and no attempt is made to cram them into arbitrary imaginary compartments."

Moreover, the author has revised his text in the light of unremitting study and frequent revisits to the cathedrals, and has procured additional and improved illustrations, all of them photographic except of course, the plans, the latter commending themselves very strongly, not only to architects, who always regard plans as being absolutely indispensable to a work of this kind, but to all who are really interested in the buildings. Another very estimable feature of the volume is the brief bibliography appended to the account of each cathedral. The book, in fact, is now much more than a mere guide-book; it is a architectural handbook of high merit, scholarly without pedantry, and popular without superficiality. Mr. Bond has hit the golden mean, and has produced a manual that will be acceptable alike to the professional architect and to the general public.

"The Cathedrals of England and Wales." Being fourth edition of "English Cathedrals Illustrated By Francis Bond, M.A., F.R.I.B.A. Illustrated with more than 200 reproductions from photographs and series of ground plans to a uniform scale. London: J. T. Batsford, 95, High Holborn. Pages xxii. + 498 ins. by 5½ ins., 7s. 6d. net.

Sir L. Alma-Tadema's Will.

The will of Sir Lawrence Alma-Tadema has been proved at £58,834 gross.

Delhi's Buildings to Cost £4,000,000.

The new Government buildings of Delhi are to be built in the Renaissance style, at a cost of £4,000,000.

New London Sessions House.

The present court-house in Newington Causeway, London, S.E., is to be rebuilt at a cost of £100,000. The work will take three years.

A Building Polytechnic Appointment.

The governors of the Northern Polytechnic have appointed Mr. J. Campbell Reid, A.R.I.B.A., as head of the building trade department at a salary of £400 a year, rising to £500. Now Mr. Reid is head of the building department of the Paisley Technical College.

Hull Builder's Failure.

A meeting of the creditors of Frederick West, joiner and builder, Hull, was held last week. The debtor's statement of affairs showed gross liabilities £11,544; creditors fully secured £10,995; £550 was expected to rank for dividend, and the assets are £7, leaving a deficiency of £544.

Air-Gas Generators.

At the Royal Sanitary Institute Health Exhibition now being held at York the highest class of award and medal have been awarded to the Beacon Light (Valveless) Gas Generator, Ltd., of 105, Horseferry Road, Westminster, for their air-gas generator, shown working at the exhibition.

The Jack Phillips Memorial.

The memorial at Guildford to Jack Phillips, the "wireless" operator of the "Titanic," is to be designed by Miss Gertrude Jekyll. It will be placed on a piece of land near the Technical Institute and will comprise a drinking fountain with a small playing green around and a lily pond, constructed in Bargate stone.

NOTES ON HOUSE PAINTING
AND DECORATION.

BY ARTHUR SEYMOUR JENNINGS.

The Economy of Using Good Paint.

When will architects and property owners understand the great economy of using the very best paint they can obtain? Making the cost of labour in painting at twice that of material of average quality, the immense advantage of using a paint which will last from five to ten years as compared with another which will last only three years will at once be apparent. A very simple calculation will show that a pint might cost 30s. or even 40s. a gallon and yet be quite cheap, because of its extreme durability—which would mean in effect that it would save the cost of labour. Graphite (plumbago) paint, if properly made, will last fully ten years on ironwork, but for ordinary decorative work it cannot be used, because of its colour.

High-Grade Enamels for Outside Work.

It is my firm opinion that the next ten years or so will see a very great increase in the use of high-grade enamel paints for outside work. I have recently made some careful inquiries respecting the "life" of enamels—that is, how long they will last without requiring renewal when exposed outside to the action of the weather. I find that any outside enamel worthy of the name will last at least five years, the best at least eight years, or even ten. In towns like London and Sheffield, where there is much smoke, the surface of the enamel in less than a year becomes covered with dirt and soot, and washing becomes desirable at intervals of about twelve months. But the cost of this washing is much less, of course, than the cost of the labour in repainting. It might be supposed that the encrustation of dirt would seriously affect the durability of the enamel, but this is not borne out by ascertained facts. On the contrary, it appears to some extent to even have a preservative effect. In some tests made by the National Association of Master House Painters and Decorators, it was found that the dirtiest samples of painted panels were in the best condition after the dirt had been washed off. Probably the explanation is that the dirt film consists principally of pure carbon, and although this contains no inconsiderable amount of sulphuric acid, when it is deposited as soot the acid becomes exhausted or is washed out by the rain, leaving the carbon to protect the surface.

Points as to Paint-Washing.

But periodical cleaning will in most cases be regarded as a necessity, and a word of warning may be given as to this washing. The custom is to use a good deal of washing-soda, and this is very destructive to the paint or enamel. A much better plan is to add a little borax to the water, and this will be found just as effective as the soda in killing grease, but may be used without harm to the paint. Ordinary "primrose" or "Sunlight" soap may also be used with advantage, but a thorough washing-off subsequently with pure water will be required. Sometimes painters use for washing off a particular variety of soap made for decorators, called "sugar soap." This is very strong—so strong, in fact, that if left on for any length of time it will soften the paint so that it may be wiped off. Sugar soap may be used on very dirty work that is to be repainted, but it should never be employed for cleaning enamel or other paint which is to be left when clean without repainting.

It may be added that the brilliant gloss of the enamel when first put on will be lost to a great extent after a few washings; but the hard, elastic surface will remain to resist the action of the weather.

Importance of Undercoats.

It need hardly be mentioned that success in all enamel work largely depends upon the care taken with the undercoats, which must be carefully applied and brought to a perfectly smooth surface. The usual plan is to give three coats of white lead, but there is danger in the lead causing the white enamel to become yellow. Personally, I much prefer the following first coat—white lead mixed without red lead, a pigment which, I believe, might always be dispensed with in priming coats, and most architects and builders look upon it as a necessity, yet in very few countries other than our own is red lead used for the purpose. The second coat should be either lithopone, of which Charlton white is a well-known example, or one of the "undercoats" specially made for the purpose; and these, by-the-by, are almost always made on a base of lithopone. The third coat, or the one immediately under the enamel, if there are more than three, should be pure zinc oxide mixed to dry almost flat, or certainly not more glossy than an "egg-shell."

The Use of Driers.

Under no circumstances should patent or paste driers be used in the other coats, excepting the first lead coat. Special zinc or liquid driers may be had without difficulty, and these can be used with the zinc oxide and the lithopone without fear of their reducing the "body" or opacity as patent driers would be certain to do. If white enamel is objected to because of its colour—or, rather, absence of colour—any other tint or hue desired may be obtained ready made, the manufacturers stocking as a rule at least fifty colours, and sometimes more. Or the white enamel may be tinted if desired by the decorator, but in that case none but the best quality and finest ground colours should be used, such as those put up in tubes, otherwise the job will be ruined.

The White Lead Question.

Many architects and builders who realise to some extent the danger arising from the use of white lead in house painting advance the argument that if the Departmental Committee at present considering the subject should report favourably on its prohibition it would have the effect of sweeping away at once the only safeguard the architect and house owner has, namely, a standard. In passing, it may be observed as to the toxic character of lead that there is admittedly a great liability of poisoning arising from inhaling the fumes given when burning off paint and the particles of lead dust when rubbing down, even when a careful and clean workman is employed. As to doing away with the standard if white lead is prohibited from use, this appears to be, at first sight, a good argument against the prohibition; but, as a matter of fact, pure white lead varies very largely in composition, and from the point of view of a serviceable paint one lead which is quite free from adulteration may be greatly inferior to another. The variation consists principally in the fineness of the particles, a physical condition which has been proved to have an important bearing on the durability of the paint. Grinding costs money, and a lead may be so coarsely ground as to make a very poor paint and yet be certified on analysis as being pure. Again, there

are very many different processes of manufacture. The old or stack process, which is still used to a very large extent, takes at least three months to complete, and it is but natural that an effort should be made to corrode by a quicker process. Amongst those which have been commercially successful may be mentioned the Chamber process, in which corrosion is done by means of acid gases which attack the metallic lead made in the form of thin sheets. The term white lead, too, may be lawfully applied to material entirely different from hydro-carbonate of lead, the usual form, and even this varies also to some extent in composition. Hurst, the well-known writer on painters' materials, gives a number of analyses of different basic carbonate of leads varying from 63.35 of lead carbonate and 36.14 of lead hydroxide to 91.21 of the former and 8.21 of the latter, the remainder being made up of water.

Standards of Composition.

Sublimed white lead may be lawfully sold as pure white lead,* although it is of an entirely different composition from ordinary white lead, and this again varies in different samples, depending upon the ore. The authority quoted gives: Lead sulphate, Pb S O₄, 82.39; lead oxide, Pb O, 0.55; zinc oxide, Zn O, 6.33; lead carbonate, Pb CO₃, 9.42. The remainder being water.

But even if white leads were not variable it is difficult to see why other standards should not come into general use. Taking, for example, zinc oxide, which is doubtless the principal non-poisonous pigment that can take the place of white lead, we have a standard in 98 per cent. pure oxide of zinc. Here the degree of fineness is determined to a great extent by the colour, but practically all grades of zinc oxide used for painting are in a very fine state of subdivision. The process of manufacture is simply that of burning the zinc or spelter and collecting the fumes when they condense and form the zinc oxide. The lighter particles, and therefore those that are finest and whitest, are those which are farthest away from the chamber, while approximately the heaviest portions are those nearest to the burning chamber, the various points between varying from one extreme to the other. On the Continent the heavier portions of zinc oxide, which contain some amount of metal, are extensively used for painting iron and outside work of a rough character, and are found to be very durable. The other white pigment, such as lithopone, is not altogether suitable for outside work, because of its peculiar property of changing colour when exposed to the light, but this does not take place when there is a protecting coat over it. The composition is slightly variable, but may be taken at 70 per cent. of sulphate of barium and 30 per cent. of zinc sulphide, with occasionally anything up to 5 per cent. of zinc oxide. Such a composition in a specification would be quite sufficient to remove any possibility of adulteration. If the material were intended to be used for outside work the proportion of zinc oxide could be increased to 30 per cent. of the whole, and a very excellent and durable paint would thereby be obtained. Zinc oxide, however, would have to be added to the sulphide, as it could not be obtained in so large a proportion during the process of manufacture. This suggestion of specifying a composition really destroys the argument of the abolition of white lead doing away with a standard. An architect could specify

* This was decided in the Scottish Law Courts some fifteen years ago, and the decision was never reversed.

exactly what his base-paint should consist of, and an analysis would tell him whether that specification had been adhered to or not, just in the same way as it would whether white lead was reduced by the addition of barytes or other material of the kind.

Indiscriminate Specification.

The extent to which some engineers and architects carry their infatuation for "four coats of good lead and oil colour" is remarkable. They appear to think that it is the *summum bonum* of all that is good and proper in paint work, and specify it regularly and almost indiscriminately for inside and outside work on wood, cement, and iron, and they thereby involve an expenditure which is not required and must be regarded as wholly wasteful. The Tower Bridge, for example, was painted throughout with white lead, although there are many pigments which would have served better. But perhaps the most foolish and wasteful use of the "four coats lead colour" is on fibrous plaster on inside work. In conversation with a prominent manufacturer of that material I was informed that the four coats of lead colour were almost always specified when the work to be dealt with was of a high class character, such as in opera houses or the large theatres. In churches and chapels, I was told, a good water paint, one or two coats, is usually employed. The gentleman referred to confirmed my opinion that provided the fibrous plaster is properly made it requires nothing whatever to protect it, and that when it becomes dirty two thin coats of water paint give a much better result than white lead. On inside work very little protection is needed, and it must be remembered that if thick coats of any paint—oil or water—are put on they would be almost certain to destroy the beauty of the work in partly filling up the more or less delicate detail of the ornamentation and mouldings. If architects want the perfection of painting for fibrous plaster they should specify flat enamel, which may be had in many beautiful colours, and which possesses the advantage of being really washable after a few weeks from its application. But for all ordinary work a good washable water paint will answer all requirements.

BITUMINOUS-BOUND CARRIAGEWAYS.

In a paper entitled "Suggestions towards a Standard Specification for Bituminous-Bound Carriage Ways," read at the thirty-ninth annual general meeting of the Institution of Municipal and County Engineers, Mr. John S. Brodie submitted some clauses and suggestions as a basis of discussion, in the hope that they might be found useful to surveyors having the responsibility for similar works until a more complete experimental knowledge of the properties of materials suitable for road-making was available.

He said it was his practice to carry out road construction not only departmentally, but also by expert road constructors working under contracts to construct certain lengths of roads to a specification, and to maintain them subsequently for a certain number of years (usually five years) under financial guarantees. Further, he did not confine his invitations for tenders for work in accordance with his own specification only, but also invited skilled and experienced road constructors to submit alternative general specifications prepared by themselves, including

any proprietary articles, or special or patented processes with which their methods of construction might be associated; subject of course to guarantees for successful completion and maintenance for a period of years. It was obvious that, however desirable it might be to standardise road specifications, regard must always be had to local and other conditions requiring special consideration and treatment. No hard-and-fast lines could be laid down applicable to roads in every part of the country, or indeed to every part of the same district. Thus, roads running east and west would require somewhat different treatment from those running north and south, and roads closely hemmed in by trees from those in open country. The nature of the subsoil, the gradients, the rainfall, the direction of the prevailing winds, and, above all, the suitability or otherwise of the local materials of construction and maintenance, would all require most careful consideration if the best results were to be attained. The nature and amount of traffic likely to pass over the road was one of the first things to be ascertained. He urged that traffic should always be expressed in tons per annum per lineal yard of width of roadway, and, further, that for convenience a "scale of traffic intensity" should be agreed upon, on somewhat similar lines to the "scale of hardness" for water or minerals.

The contractor must excavate or fill in the site of the road so as to form the underbed to the proper levels and contour of the foundation, and must thoroughly water and roll with a ten-ton steam roller before laying the hand-packed rubble. One or more longitudinal subsoil drains must be laid, if required, where the subsoil was of an impervious nature, such as clay, peat, or other water-carrying material. Such drains should consist of butt-ended drain tiles 3 in. in diameter, laid in trenches 2 ft. 6 in. in depth, and must be connected to the road gulleys or channels. After the tiles are laid the trenches should be filled up with sand, gravel, or other open or porous material.

The foundation should consist of hand-packed rubble stone, preferably of sandstone, carefully selected. The stone must be not less than 7 in. in depth, from 5 in. to 9 in. in length, and from 3 in. to 6 in. in width, laid on edge, the stones being laid lengthwise across the roadway, to the finished profile. The interstices of the pitching may be thoroughly "blinded" up with any of the following material: broken concrete, broken sandstone, or specially hand-picked clinker. The whole must then be thoroughly watered and rolled with a ten-ton steam roller; afterwards the larger pieces of packing must be picked out, rebroken, respread, and watered, and rolled again to the proper profile. This process must be repeated until the surface has the appearance of a well-rolled macadam road. The depth of the foundation when the rolling is completed must be not less than 7 in.

The tar asphalt macadam should be made with white or grey coloured limestone, or other stone, from a quarry to be approved by the surveyor. The stone should be broken and gauged to three sizes, viz., not less than 60 per cent. to 2½ in., not more than 30 per cent. from 2½ in. to 1½ in., and 10 per cent. to ¾ in. to ½ in., all below ½ in. being discarded.

The tar, pitch, and tar oil used should be in strict conformity with the Road Board specifications. The whole of the broken stone must be thoroughly dried, all

dust removed, and heated to about 220 deg. Fahr. before being covered with the tar, and the mixing must be done under cover. From 9 to 12 gallons of tar should be used to one ton of broken stone, the tar being applied to the broken stone at a temperature of from 260 deg. to 280 deg. Fahr. as taken in the tar boiler. Mixing must be carried out by an approved mechanical power asphalt mixer while the stone is dry and heated, and should be continued until the entire surface of every stone is covered with tar.

The respective sizes of broken stone, immediately after mixing with the tar, should be spread, levelled, and rolled with a ten-ton steam roller in separate layers; the 2½ in. stone as a bottom layer, and the intermediate layer of 1½ in. in thickness, with a top dressing of ½-inch chippings. The total thickness should be, on all parts of the surface of the road, not less than 4¼ in. thick, after the rolling is completed and the surface brought up to the required contour.

Within two months of the carriage-way being complete as above and used by the traffic, the surface should be carefully cleaned, and afterwards sprayed with boiling tar, and gritted with granite chippings gauged between ¼ in. and ⅞ in. square meshed screens, to the extent of one ton of chippings to 300 to 350 square yards of surface of road.

EDINBURGH'S TOWN-PLANNING SCHEME.

It is quite apparent, from the remarks heard even in circles where municipal affairs are common subjects of discussion, says a leader writer in the "Edinburgh Evening Despatch," that the citizens of Edinburgh have only the haziest notions of what is involved in the town-planning scheme proposed for the Bellevue district. Many people, it seems, associate town-planning with garden cities and garden suburbs or ambitious enterprises of municipal building, and they were surprised, and not a little disappointed, when they read of the controlling parties discussing height of tenements and other familiar and prosaic details. They had expected pretty little houses of the old English style, embowered in gardens and fringing the edge of artistically winding, tree-girt roads—a garden suburb, in fact, like what may be seen at Hampstead or in the outskirts of Birmingham and York.

This is quite a mistake. In the first place, Bellevue is not a suburb. It is a central area, which happens to be still vacant, surrounded for the most part by industrial buildings, and it can never do other than take on the prevailing complexion of its surroundings. That is to say, it will some day be covered with houses for the working-classes, and, perhaps, with some of those new industries which Edinburgh hopes for, and which she may realise when Edinburgh and Leith join partnership and set their heads together to devise business schemes for their mutual benefit. All that the corporation and the owners of the ground propose is to draw up a plan defining in a general way how the streets of the Bellevue area should be arranged when the district comes to be built upon, the kind of houses to be erected, and the height of houses and breadth of streets. They are only regulating in advance under the new powers conferred by the Town-Planning Act. All that we can obtain by

new scheme—and all that we can reasonably hope to obtain—is the tenement in its most approved form, broader and better arranged streets, and, perhaps, a public park of fair proportions.

That is all (our Edinburgh contemporary concludes), but it is a great deal. If we had been able to order our affairs in this in days gone by, we should have had many spacious and worthy avenues of entry to the city. We should not have had the mortification of the lost opportunity in Morningside Road, or Gorgie the shabby, higgledy-piggledy rookery that is to-day.

GROYNES AND SEA-WALLS.

The most efficient barrier against wave action is the layer of beach formed by the waves themselves. The mass of sand and shingle is heaped up into a sloping mound extending well above high-water mark, so that waves tend to expend themselves in running up the incline. Besides the longitudinal movement of beach, a continuous loss of material is caused by the fact that the particles, in rubbing against each other, are continually reduced in size, and are finally carried away as silt into deep water. From this it follows that, as a whole, the

layer of beach is insufficient to protect the entire coastline from erosion.

As a deposit of sand and shingle is so effective in breaking up the waves, it is obviously a great advantage if beach can be induced to form in greater quantities. This can be done by erecting groynes, which may be described as vertical partitions built out for some distance from just above high-water mark, in a direction approximately at right angles to the shore. These, an engineering correspondent of the "Daily Telegraph" points out, serve a two-fold object. In the first place they check the littoral drift of beach along the coast, so that it accumulates on the windward side of the groyne, and, in addition, they tend to reduce the agitation and consequent attrition of the particles under wave action. A further advantage is that, by checking the velocity of the water to some extent, deposition of sand is encouraged. Piers, jetties, and other obstructions serve the same object.

The one disadvantage of groynes is that, while effecting a decided local improvement, they deprive places to leeward of some of their supply of the littoral drift. Thus, while minimising the evil in one place, it is aggravated in another. This unfortunately cannot be avoided entirely. Obviously a valuable town site with costly promenades and other works on the sea-

front must be protected if possible, while, if valuable interests to leeward of the town are threatened, they can be safeguarded by groynes in the same way.

Speaking generally, sea walls founded upon erodible material are not very effective in checking the inroads of the sea unless a protecting layer of beach can be made to form in front of them. The water dashing over the top accumulates behind the wall, and in falling back tends to erode material from the base of the wall and expose the foundations.

To be thoroughly effective, a sea wall should have an impermeable layer of concrete or some other material extending from the top of the wall for some distance back. In this way the sea is kept from affecting the back of the wall. In addition, it is most important that the foundations be protected by a layer of beach collected by a system of groynes perpendicular to the wall. This latter precaution is not so necessary when a solid rock foundation can be obtained for the wall.

In many cases extensive damage has been caused by the removal of beach for road-making, concrete work, etc., and by dredging in the proximity of the shore, facilitating the approach of large waves to the beach. Too much care cannot be exercised in interfering with the natural features of a coast-line.



NEW PREMISES FOR THE ROYAL SOCIETY OF MEDICINE, HENRIETTA STREET, LONDON, W.: THE FELLOWS' LIBRARY.

JOHN BELCHER, R.A., AND J. J. JOASS, F.R.I.B.A., ARCHITECTS.

OUR PLATE.

New Premises for the Royal Society of Medicine.

In the new building for the Royal Society of Medicine which has been erected at the corner of Henrietta Street and Wimpole Street, W., Messrs. Belcher and Joass have achieved a great success. The design is simple in its parts, but there is a straightforward vigour about it which holds the attention, and it possesses a dignity eminently in keeping with the institution housed within its walls. The building was opened by the King and Queen on May 21st. The interior is very unpretentious, there being only one room with any special claims. This is the Fellows' library on the first floor, extending the whole length of the building on the Henrietta Street side, with a large bay window overlooking Wimpole Street. It is an admirable room, both as regards its architectural effect and its practical arrangement. The length is 110 ft., the width 28 ft., and the height 19 ft. The shelving extends from floor to ceiling, and the lighting is excellent for the numerous tables. A novelty is the arrangement of

lighting the table lamps by making contact through the leg of the table—a method devised by the secretary of the society, Mr. J. Y. W. MacAlister. This library contains 100,000 volumes, and is believed to be the finest collection of medical books in the Empire. The woodwork is oak (as elsewhere throughout the building), and the floor is covered with Turkey carpets with parquet border. Adjoining the library are distribution and study rooms, and on the same floor is the Fellows' private lavatory—one of the best of its kind we have seen, with tiled walls, rubber flooring, and the most up-to-date fittings.

The next largest room in the building is the Dr. Robert Barnes Hall, entered to the right of the entrance hall. This is intended for general meetings. It has a raking floor seated with chairs for three or four hundred people, and at one end is a raised platform with desk, behind which is fitted a lantern screen. A similar hall, but smaller, is provided to the left of the entrance hall, the remainder of the space on this floor being occupied by cloak and staff rooms, and by rooms for the examination of cases. The entrance hall, as will be seen from the plan, is L-shaped, and at

its further end is embellished with an eighteenth-century marble mantelpiece bearing an Empire clock and pedestals, the gift of the president of the society—Sir Henry Morris, Bart.

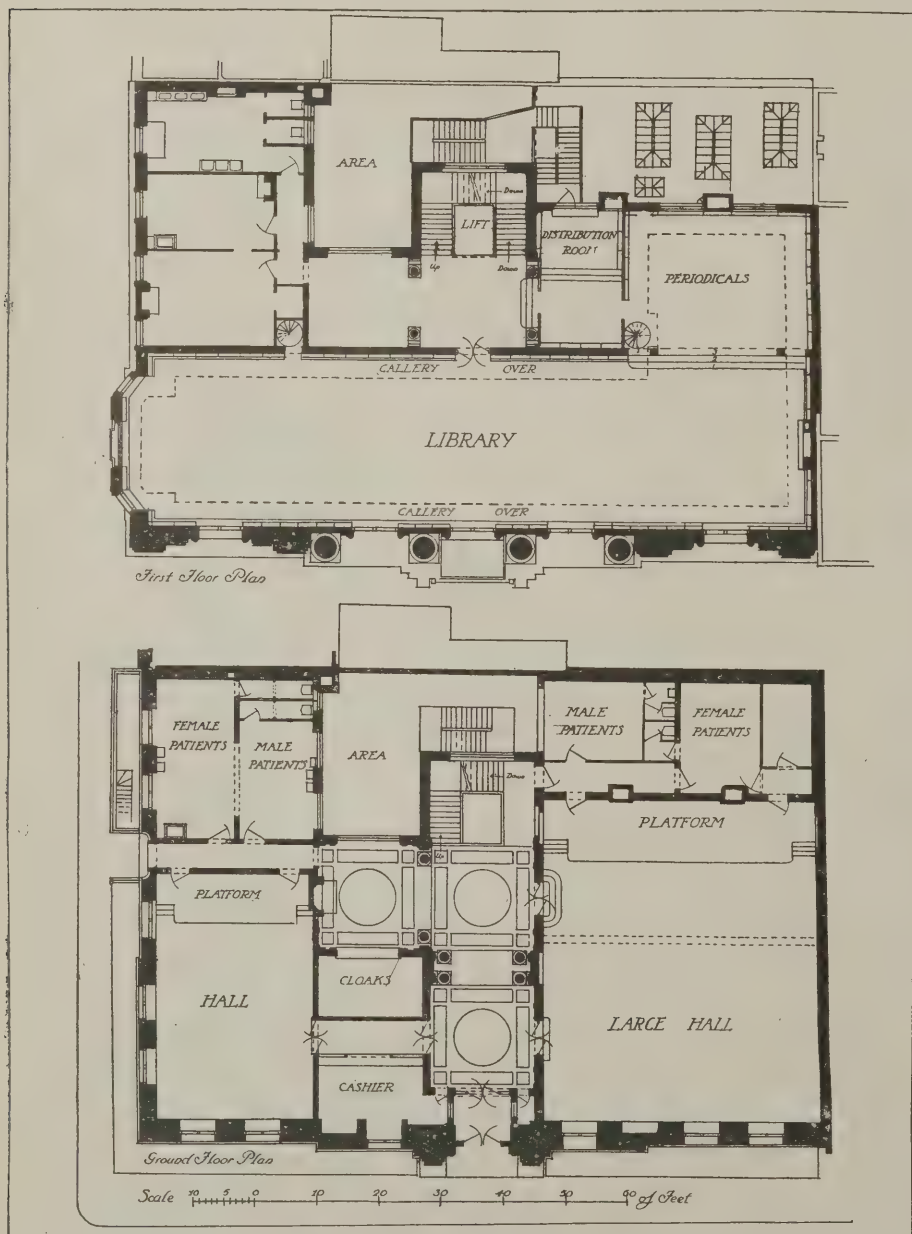
On the second floor are the council chamber, committee-room, Fellows' tea-room and smoking-room; and on the third floor are the Marcus Beck laboratory, the lady Fellows' room, and secretarial offices, while in the basement are stack-rooms, lavatories, cloak-rooms, kitchen, a porter's room. Over the chimney-piece in the council chamber is a medallion by John Bacon, R.A., representing Æneas escaping from burning Troy, carrying his father, the blind Anchises. For this medallion Bacon was awarded the gold medal of the Royal Academy in the year of its foundation, 1768. It was purchased by Sir William Chambers, and was placed by him over the dining-room mantelpiece of the house he was at that time building for himself at 53, Berners Street. The house afterwards became the home of the Royal Medical and Chirurgical Society (the former title of the Royal Society of Medicine). The medallion was removed together with the mantelpiece, in 1889 by Mr. MacAlister and placed in the society's new house at 20, Hanover Square, whence it was removed to its present position.

The façade of the building is carried out in Portland stone, the stone carving having been executed by Mr. A. Broadbent and Mr. Crosland McClure. The floors are of hollow block and reinforced concrete construction, carried out by Messrs. the Frank Steel and Fireproof Construction Co., Ltd. The finishings generally are of oak, and the staircase and landings of Hopton Wood stone.

The general contractors were Messrs. G. Godson and Sons, who also carried out the panelling and the sanitary work. The sanitary fittings were supplied by Messrs. John Bolding and Sons, Ltd., the bookcases and tables in the library by Messrs. John P. White and Sons, Ltd., the lift enclosure by Messrs. Caston and Co., Ltd., waterproofing by Messrs. Ceresit, Ltd., rubber tiling in Fellows' lavatory by Messrs. Leyland and Birmingham Rubber Co., Ltd., and electric wiring, bells, and telephones by Messrs. the Electric Light Insurance and Maintenance Co., Ltd.—the electrical installation being of a special character to conform with medical requirements. Among other sub-contractors were the following: Stone, Nine Elm; Stone Masonry Works, Ltd.; steelwork, Drew-Bear, Perks and Co.; partitions and "Ferro-Glass" pavement lights, J. King and Co.; casements, Crittall Manufacturing Co., Ltd.; grates, Well Fire Co.; door furniture, Carter and Aynsley, Ltd.; gates, etc., W. T. Allen and Co.; lifts, Smith, Major and Stevens; heating and ventilation, J. Boyd and Sons; metal shelving for books, W. Lucy and Co.

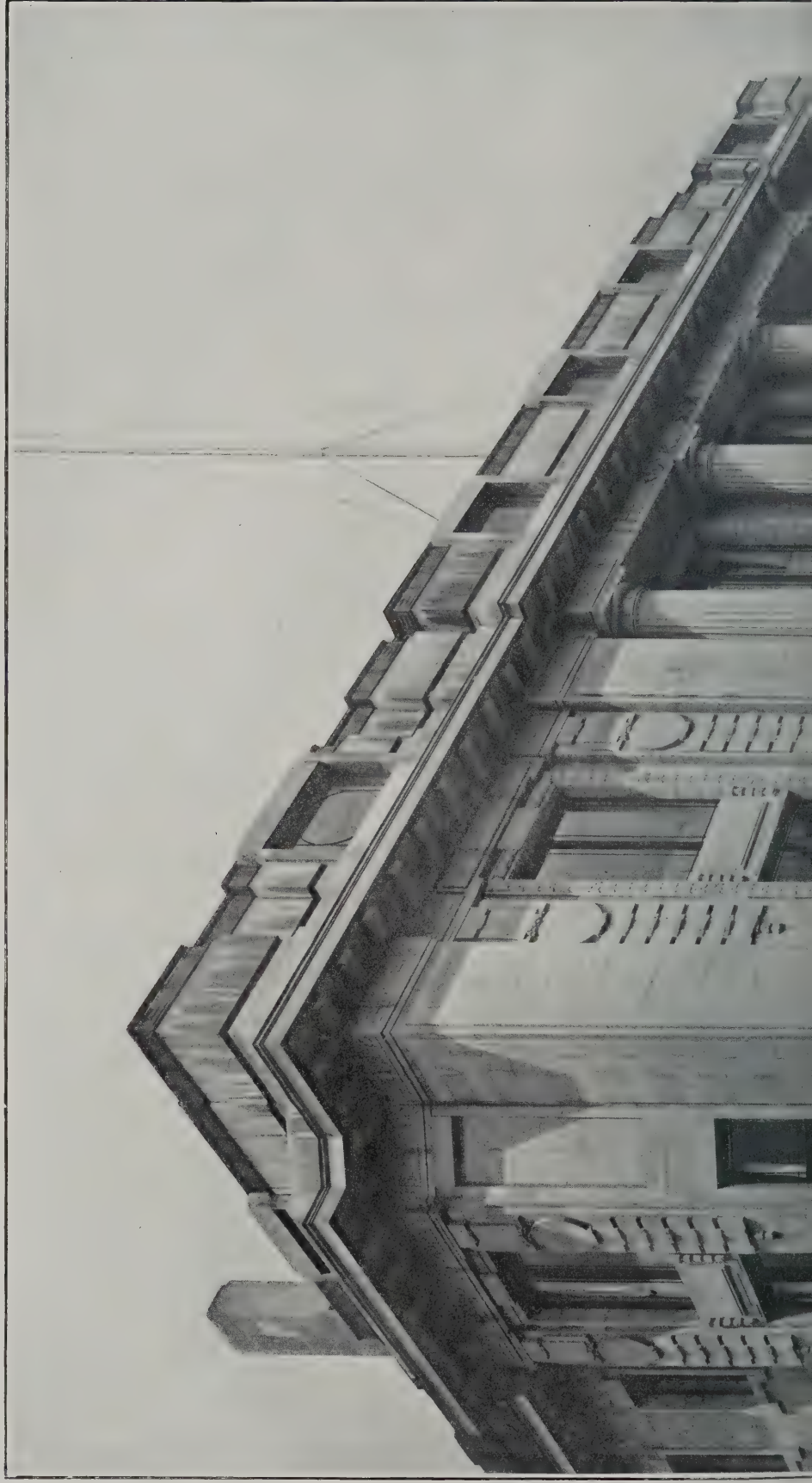
New Ironmongers' Almshouses.

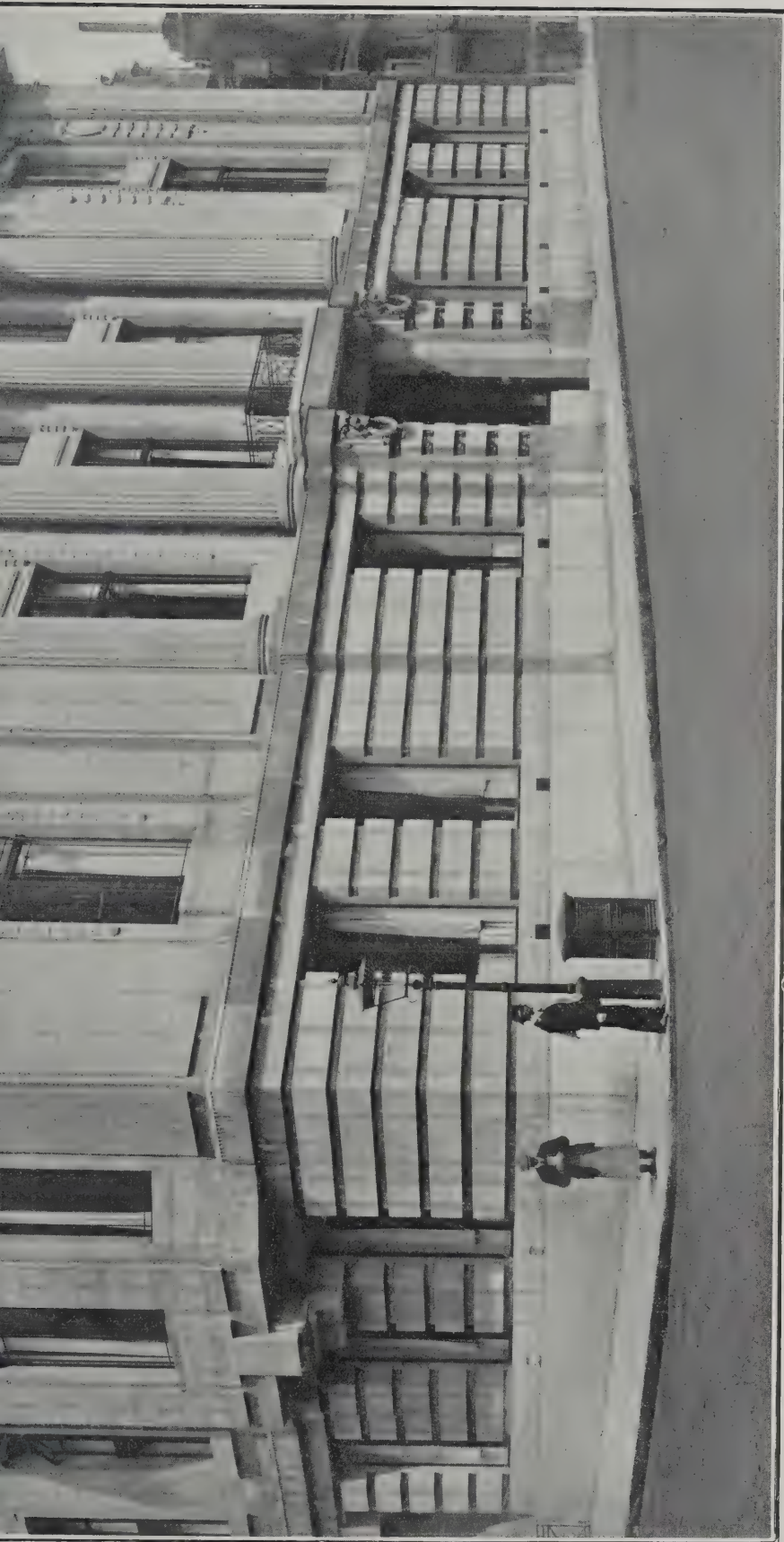
The Duke of Norfolk, citizen and ironmonger, has laid the foundation-stone of the almshouses about to be erected by the Ironmongers' Company at Nottingham Kent, where fourteen acres of grass land have been acquired. The architect, Mr. George Hubbard, F.R.I.B.A., F.S.A., who is the company's surveyor, has provided accommodation for forty inmates, of whom thirty-two will have single apartments, and the remainder additional rooms. There will also be an administrative block for the matron and nurses. The grounds will be entered through wrought-iron gates flanked by a lodge. The buildings, of brick and stone, are Georgian in style.



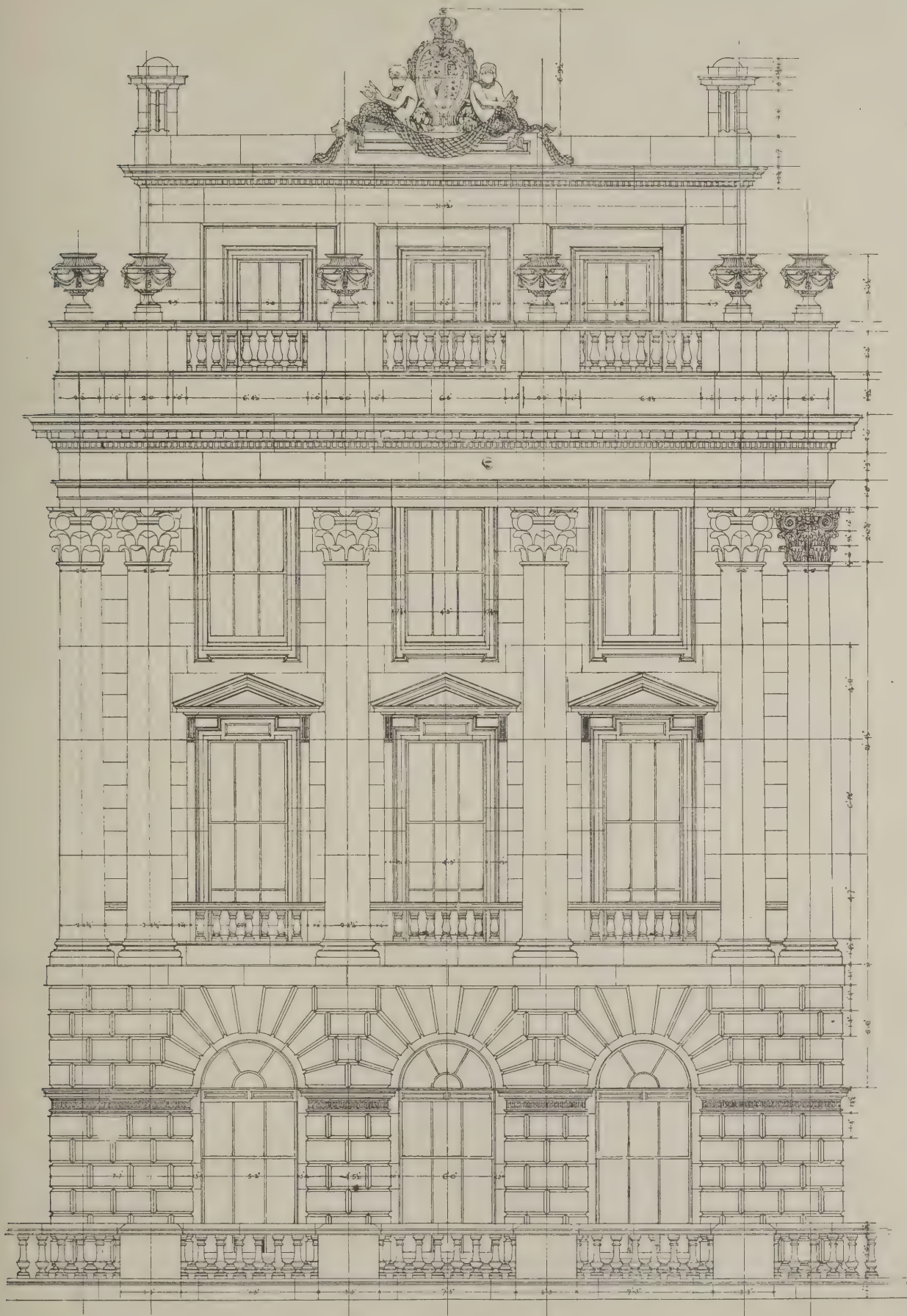
NEW PREMISES FOR THE ROYAL SOCIETY OF MEDICINE, HENRIETTA STREET, LONDON, W. GROUND AND FIRST-FLOOR PLANS.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, August 7th, 1912





NEW PREMISES FOR THE ROYAL SOCIETY OF MEDICINE, HENRIETTA STREET, LONDON, W.
JOHN BELCHER, R.A., AND J. J. JOASS, F.R.I.B.A., ARCHITECTS.



THE WEST FRONT OF SOMERSET HOUSE, LONDON: DETAIL OF CENTRAL FEATURE OF PROJECTING WINGS.

MEASURED AND DRAWN BY HERBERT A. WELCH, A.R.I.B.A.

Further drawings of this front, by Pennethorne, were given in our issue for July 24th.

LIBRARY
OF THE
CONGRESS

NEWS ITEMS.

The Old General Post Office.

The old General Post Office, St. Martin's-le-Grand, has been handed over to the housebreakers. The first stone was laid in 1824, and on September 23, 1829, the building was opened for business in place of the original General Post Office in Lombard Street. When the site has been cleared additional accommodation will be provided for the administrative departments of the Post Office, which have long been cramped for room in the buildings erected in 1874 opposite the old General Post Office.

Building in Birmingham.

We are informed that the following important contracts have been recently secured by Mr. T. Johnson, Great Brook Street and Willis Street, Birmingham: Extensions and reinforced-concrete construction for the Birmingham Metal and Munitions Co., Ltd., Adderley Park Mills, Birmingham; extensions to factory, Garri-son Lane, Birmingham (contract over £3,500; Mr. Geo. A. Cox, architect); new Baptist church, Chester Road, near Birmingham (contract £3,333; Mr. F. B. Andrews, architect).

Britain's Roman Roads.

A special committee of the Roads Improvement Association is now investigating the whole system of the old Roman roads in this country to decide whether, in view of the facilities now afforded by the Imperial Road Improvement Fund, any action can usefully be taken to bring any of the roads, now disused, into service again. The secretary to the association (Mr. Wallace E. Riche, Caxton House, Westminster, S.W.) would be glad to receive, for the information of the committee, any suggestions from tourists and others who have taken an interest in this matter.

A City Vista.

The Town Planning Committee of the Royal Institute of British Architects have approached the City Corporation on the subject of a new thoroughfare from Newgate Street to Moorgate Street in connection with the rebuilding of the old Post Office. The Institute desire to preserve the view of the tower of Sir Christopher Wren's church of St. Vedast Foster. While the suggested new street is not considered practicable, the preservation of the view of the church is. Already the Corporation has arranged that the new Post Office building in St. Martin's-le-Grand shall be slightly set back so far as the present projections are concerned, and there is also to be a squaring of the yard to the left of the present building, which will give a much wider entrance to Gresham Street.

A Standard Rate for Architects.

"A Labouring Architect" writes to the "Glasgow Herald" to the following effect: "I observe that at the meeting of the Town Council yesterday the conditions of the competition for the Municipal Buildings extension came up for criticism. In the course of the debate it was agreed that, instead of paying $1\frac{1}{2}$ per cent. to the architect in the event of the work not being proceeded with within twelve months, a lump sum of £500 be paid. It was mentioned that the fee of $1\frac{1}{2}$ per cent. would amount to £1,800. What I do not understand is the mental attitude of men who voted in favour of the amendment. The $1\frac{1}{2}$ per cent. is justly earned, and is

the recognised legal payment for the amount of work done, and surely the labourer is worthy of his hire. It seems to be considered by a certain section of the members of the Town Council that while the standard rate of wages clause must be embodied in contracts it only applies to the weekly wage-earner."

London's New County Hall.

At a recent meeting of the London County Council, Mr. E. Smith inquired of the chairman of the Establishment Committee if any steps were being taken to secure the erection of the new County Hall within the next ten years. (Laughter.) Mr. Isidore Salmon said that tenders for the superstructure would be invited in January next, with a view to construction being commenced in April. It was expected that the whole building would be completed by midsummer, 1916. There were eighty-five men working on the substructure during the week ended July 6th and seventy-one the week before. The falling off was due to the dispute in the transport trade, and the difficulty of obtaining materials.

Builders' Wages Advance in Bristol.

The question of rates of wages and alterations in working rules, which have been under discussion between the Bristol Master Builders' Association and the operatives in this city for some months past, has now been brought to a satisfactory settlement. The result is an increase of $\frac{1}{2}$ d. per hour to all branches of the trade, with the exception of general labourers and plasterers, who were granted this advance earlier in the year, and the standard rates of wages will accordingly be: Carpenters and joiners, masons, bricklayers, and

plumbers, $9\frac{1}{2}$ d. per hour; painters, 9d. per hour; general labourers, $6\frac{1}{2}$ d. per hour; scaffolders and engine-drivers, 7d. per hour; stone sawyers, $7\frac{1}{2}$ d. per hour. Various alterations in the general working rules have also been agreed upon.

The Midland Iron and Steel Trade.

A conference between the employers' and operatives' sections of the Midland Iron and Steel Wages Board, which controls ironworkers' wages in the Midlands, South Wales, and Lancashire and Yorkshire, took place at Birmingham recently. The men have given three months' notice to terminate the sliding scale by which wages are regulated, and have applied for a rate of not less than 10s. per ton and a working day of not more than ten hours. The present rate of pay is 9s. 3d. per ton. The decision will not be published until it has been made known to the whole of the employers, but it is understood that the men have agreed to a compromise. The Wages Board has been in existence for forty-four years, and during that time no open rupture has taken place.

LYCH GATE AT THE LICKEY,
NEAR BROMSGROVE.

The lych-gate here shown is at the entrance to an extension churchyard at The Lickey, near Bromsgrove, and is built of local sandstone and oak. The roof, which is an open one, is covered with Westmorland slates, and has a cast lead cross on the ridge. Messrs. J. and A. Brazier, of Bromsgrove, were the builders, from the design of Mr. A. Edgerton Leeson, architect, Birmingham.



LYCH GATE AT THE LICKEY, NEAR BROMSGROVE.
A. EDGERTON LEESON, ARCHITECT.

INTERPRETING RESULTS OF PORTLAND CEMENT TESTS.

This very useful résumé of the "Interpretation of Results" of Portland cement tests, and some auxiliary specifications, are derived from the recently issued U.S.A. Government standard specification for Portland cement. For preliminary general observations, and the regulations for standard methods of testing, see the Journal of July 24, p. 104; for chemical analysis, July 31, p. 129.

III. Interpretation of Results.

Chemical.—The composition of normal Portland cement has been the subject of a great deal of investigation, and it can be said that the quantities of silica, alumina, oxide of iron, lime, magnesia, and sulphuric anhydride can vary within fairly wide limits without materially affecting the quality of the material.

A normal American Portland cement which meets the standard specifications for soundness, setting time, and tensile strength, has an approximate composition within the following limits:—

	Per cent.
Silica	19 to 25
Alumina	5 to 9
Iron oxide	2 to 4
Lime	60 to 64
Magnesia	1 to 4
Sulphur trioxide	1 to 1.75
Loss on ignition	0.5 to 3.00
Insoluble residue	0.1 to 1.00

It is also true that a number of cements have been made both here [U.S.A.] and abroad which have passed all standard physical tests in which these limits have been exceeded in one or more particulars, and it is equally true that a sound and satisfactory cement does not necessarily result from the above composition.

It is probable that further investigation will give a clearer understanding of the constitution of Portland cement, but at present chemical analysis furnishes but little indication of the quality of the material.

Defective cement usually results from imperfect manufacture, not from faulty composition. Cement made from very finely ground material, thoroughly mixed and properly burned, may be perfectly sound when containing more than the usual quantity of lime, while a cement low in lime may be entirely unsound, due to careless manufacture.

The analysis of a cement will show the uniformity in composition of the product from individual mills, but will furnish little or no indication of the quality of the material. Occasional analysis should, however, be made for record and to determine the quantity of sulphuric anhydride and magnesia present.

The ground clinker as it comes from the mill is usually quick setting, which requires correction. This is usually accomplished by the addition of a small quantity of more or less hydrated calcium sulphate, either gypsum or plaster of Paris. Experience and practice have shown that an addition of 3 per cent. or less is sufficient for the purpose.

Three per cent. of calcium sulphate (CaSO_4) contains about 1.75 per cent. sulphuric anhydride (SO_3), and as this has been considered the maximum quantity necessary to control time of set, the specification limits the SO_3 content to 1.75 per cent.

The specification prohibits the addition of any material subsequent to calcination except the 3 per cent. of calcium sulphate permitted to regulate time of set. Other additions may be difficult or impossible to

detect, even by a careful mill inspection during the process of manufacture; but as the normal adulterant would be ground raw material, an excess of "insoluble residue" would reveal the addition of silicious material, and an excess in "loss on ignition" would point to the addition of calcareous material when either is added in sufficient quantity to make the adulteration profitable.

The effect of relatively small quantities of magnesia (MgO) in normal Portland cement, while still under investigation, can be considered harmless. Earlier investigators believed that as magnesia had a slower rate of hydration than lime, the hydration of any free magnesia (MgO) present would occur after the cement had set and cause disintegration.

The effect of magnesia was considered especially injurious when the cement was exposed to the action of sea water. More recent investigation has shown that cement can be made which is perfectly sound under all conditions when containing 5 per cent. of magnesia, and it has also been found that the lime in Portland cement exposed to sea water is replaced by magnesia.

The maximum limit for magnesia has been set at 4 per cent., as it has been established that this quantity is not injurious, and it is high enough to permit the use of the large quantities of raw material available in most sections of the country.

Physical.

Specific Gravity.—If the Le Chatelier apparatus is used for the determination of specific gravity, the clean volumometer flask is filled with benzine free from water (which can be obtained by placing some calcium chloride or caustic lime in the benzine storage jar) to a point on the stem between zero and 1 cubic centimeter. The flask is then placed in a constant temperature bath until volume is constant. The usual method is to introduce 64 grams of cement into the flask, taking care that the powder does not adhere to the tube above the liquid, and to free the cement from air by rolling the flask in an inclined position. The flask is then replaced in the constant temperature bath until a constant volume is recorded.

The specific gravity is obtained from the formula:—

$$\text{specific gravity} = \frac{\text{weight of cement in grams}}{\text{displaced volume in cu. cm.}}$$

The specific gravity of a Portland cement is not an indication of its cementing value. It will vary with the constituents of the cement, especially with the content of iron oxide. Thus the white or very light Portland cements, containing only a fraction of a per cent. of iron oxide, usually have a comparatively low specific gravity ranging from 3.05 to 3.15, while a cement containing 3 to 4 per cent. or more of iron oxide may have a specific gravity of 3.20 or even higher. It is materially affected by the temperature and duration of burning the cement, the hard-burned cement having the higher specific gravity. A comparatively low specific gravity does not necessarily indicate that a cement is under-

burned or adulterated, as large percentage of raw materials could be added to cement with a normally high specific gravity before the gravity would be reduced below 3.10.

If a Portland cement fresh from the mill normally has a comparatively low specific gravity, upon aging it may absorb sufficient moisture and carbon dioxide to reduce the gravity below 3.10. It has been found that this does not appreciably affect the cementing value of the material; in fact, many cements are unsound until they have been aged. Thus, a redetermination is permitted upon a sample heated to a temperature sufficient to drive off any moisture which might be absorbed by the cement subsequent to manufacturing, but would not drive off any carbon dioxide nor correct underburning in the process of manufacturing the cement.

The value of the specific gravity determination lies in the fact that it is easily made in the field or laboratory, and when the normal specific gravity of the cement is known, any considerable variation in quality due to underburning or the addition of foreign materials may be detected.

Fineness.—Only the extremely fine powder of cement called flour possesses appreciable cementing qualities, and the coarser particles are practically inert. No sieve is fine enough to determine the flour in a cement, nor is there any other means of accurately and practically measuring the flour. Some cements grind easier than others; thus, although a larger percentage of one cement may pass the 200-mesh sieve than another, the former may have a smaller percentage of actual flour due to the difference in the hardness and the character of the clinker, and the method used in grinding. Thus the cementing value of different cements cannot be compared directly upon their apparent fineness through a 200-mesh sieve. With cement from the same mill, with similar clinker and grinding machinery, however, it is probable that the greater the percentage which passes the 200-mesh sieve the greater the percentage of flour in that particular cement.

Normal Consistency.—The quantity of water used in making the paste from which the pats for soundness, tests of setting, and the briquettes are made, is very important, and may vitally affect the results obtained. The determination consists in measuring the quantity of water required to bring a cement to a certain state of plasticity.

In determining the normal consistency by the ball method, after mixing the paste it should be formed into a ball with as little working as possible, and a new batch of cement should be mixed for each trial paste. In order to obtain just the requisite quantity of paste to form a ball 2 in. in diameter, a measure made from a pipe with a 2-in. inside diameter cut $1\frac{1}{8}$ in. long will be found convenient. The section of the pipe should be open at both ends, so that it can be pushed down on to the paste on the mixing table, and the excess paste cut off with the trowel.

Mixing.—The homogeneity of the cement paste is dependent upon the thoroughness of the mixing, and this may have considerable influence upon the time of setting and the strength of the briquettes.

Soundness.—The purpose of this test is to detect those qualities in a cement which tend to destroy the strength and durability. Unsoundness is usually manifested by a change in volume which causes cracking, swelling, or disintegration. If the pat is

not properly made, or if it is placed where it will be subject to any drying during the first twenty-four hours, it may develop what are known as shrinkage cracks, which are not an indication of unsoundness, and should not be confused with disintegration cracks. No shrinkage cracks should develop after the first twenty-four or forty-eight hours. The failure of the pats to remain on the glass or the cracking of the glass to which the pat is attached does not necessarily indicate unsoundness. In moulding the pats, the cement paste should first be flattened on the glass and the pat formed by drawing the trowel from the outer edge towards the centre.

Time of Setting.—The purpose of this test is to determine the time which elapses from the moment water is added until the paste ceases to be plastic and the time required for it to obtain a certain degree of hardness. The determination of the "initial set," or when plasticity ceases, is the more important, as a disturbance of the material after this time may cause a loss of strength, and thus it is important that the mixing and moulding or the incorporating of the material into the work be accomplished within this time. The time of setting is usually determined upon one of the pats which is to be used for the soundness test, the top surface being flattened somewhat. In using the Gillmore needles care should be taken to apply the needles in a vertical position and perpendicular to the surface of the pat. The rate of setting and hardening may be materially affected by slight changes in temperature. The percentage of water used in gauging and the humidity of the moist closet in which the test pieces are stored may also affect the setting somewhat.

Tensile Tests.—Consistent results can only be obtained by exercising great care in moulding and testing the briquettes. In testing, the sides of the briquette and the clips should be thoroughly cleaned and free from grains of sand or dirt, which would prevent a good bearing, and the briquette should be carefully centered in the clips to avoid cross strains. It may be considered good laboratory practice if the individual briquettes of any set do not show a greater variation from the mean value than 8 per cent. for sand mixtures and 12 per cent. for neat mixtures.

IV. Auxiliary Specifications.

Bureau of Standard Sieve Specifications.—Wire cloth for standard sieves for cement and sand shall be woven (not twilled) from brass, bronze, or other suitable wire, and mounted on the frames without distortion.

The sieve frames shall be circular, about 20 centimeters (7.87 in.) in diameter, 5 centimeters (2.36 in.) high, and provided with a pan about 5 centimeters (1.97 in.) deep and a cover.

No. 100 Cement Sieve, 0.0055-in. Opening.—The No. 100 sieve should have 100 wires per inch and shall conform to the following specifications of diameter of wire and size of mesh:—

The diameter of the wires in the sieve should be 0.0045-in., and the average diameter of such wires as may be measured shall not be outside the limits 0.0042 to 0.0048 in. for either warp or shoot wires. The number of warp wires per whole inch, as measured at any point of the sieve, shall not be outside the limits 98 to 101 per inch, and of the shoot wires 96 to 102 per inch. For any interval of 0.25 to 0.50 inch in which the mesh may be measured the mesh shall not be outside the limits 95 to 101 wires per inch for the

warp wires and 93 to 103 wires per inch for the shoot wires.

No. 200 Cement Sieve, 0.0029-in. Opening.—The No. 200 sieve should have 200 wires per inch, and shall conform to the following specifications of diameter of wire and size of mesh.

The diameter of the wires in the sieve should be 0.0021 in., and the average diameter of such wires as may be measured shall not be outside the limits 0.0019 to 0.0023 in. for either warp or shoot wires. The number of warp wires per whole inch, as measured at any point of the sieve, shall not be outside the limits 195 to 202 per inch, and of the shoot wires 192 to 204 per inch. For any interval of 0.25 to 0.50 in. in which the mesh may be measured the mesh shall not be outside the limits 192 to 203 wires per inch for the warp wires and 190 to 205 wires per inch for the shoot wires.

No. 29 Sand Sieve, 0.0335-in. Opening.—No 20 sieves shall have between 19.5 and 20.5 wires per whole inch of the warp wires and between 19 and 21 wires per inch of the shoot wires. The diameter of the wire should be 0.0165-in., and the average as measured shall not vary outside the limits of 0.0160 to 0.0170-in.

No. 30 Sand Sieve, 0.0223-in. Opening.—No. 30 sieves shall have between 29.5 and 30.5 wires per whole inch of the warp wires and between 28.5 and 31.5 wires per whole inch of the shoot wires. The diameter of the wire should be 0.0110-in. and the average as measured shall not vary outside the limits 0.0105 to 0.0115-in.

Bureau of Standard Specifications for Specific-Gravity Flasks.

Material and Annealing.—The material from which the flasks are made shall be glass of the best quality, transparent, and free from striæ. It shall adequately resist chemical action and have small thermal hysteresis. The flasks shall be thoroughly annealed at 400 degrees C. to 500 degrees C. for twenty-four hours, and allowed to cool slowly before graduating. They shall be of sufficient thickness to ensure reasonable resistance to breakage.

Design.—The cross section of the flask shall be circular, and of certain prescribed shape and dimensions. This design is intended to ensure complete drainage of the flask on emptying and stability of standing on a level surface, as well as accuracy and precision of reading. The neck of the flask shall be cylindrical for at least 1 centimeter above and below every graduation mark. There shall be a space of at least 1 centimeter between the highest graduation mark and the lowest point of the grinding for the glass stopper.

Capacity.—The flask should contain approximately 250 cc. when filled to the zero graduation mark.

Graduations.—The neck shall be graduated from 0 to 1 cc. and from 18 cc. to 24 cc. into 0.1-cc. divisions. The 0.1-cc. graduations should be continued two below the 0 and two above the 1-cc. graduation. The graduations shall be of uniform width, finely but distinctly etched, and shall be perpendicular to the axis of the flask. The 0.1-cc. graduations shall be at least 1 millimeter apart. This will require an internal diameter of the neck not greater than 11.3 millimeters. The 1-cc. graduations shall extend completely around the neck of the flask, and shall be numbered to indicate the capacity. The 0.1-cc. graduations shall extend at least half way around the neck, and the 0.5-cc. graduations shall have a length about midway between the other two. The gradua-

tion marks shall have no apparent irregularities of spacing.

Standard Temperature.—The flasks shall be standard at 20 degrees C. The indicated specific gravities will then be at 20 degrees referred to water at 4 degrees as unity—that is, density at 20 degrees in grams per cc.

Inscriptions.—Each flask shall bear a permanent identification number, and the stopper shall bear the same number. The standard temperature shall be indicated and the unit of capacity shall be shown by the letters "cc" placed above the highest graduation mark.

Tolerance.—The error of any indicated capacity shall not be greater than 0.05 cc.

Interpretation of Specification.—The foregoing specification is intended to represent the most desirable form of specific-gravity flask for use in testing cements. Variations of a few millimeters in such dimensions as total height of flask, diameter of base, etc., are to be expected, and will not be considered sufficient cause for rejection. The specification in regard to tolerance, inscriptions, length, spacing, and uniformity of graduations will, however, be rigidly enforced.

The specification is accompanied by the following Executive Order:—

It is hereby ordered that all Portland cement that may hereafter be purchased by any Department, Bureau, Office, or independent establishment of the Government, or that may be used in construction work connected with any of the aforesaid branches of the Government service, shall conform in every respect to the specification for Portland cement adopted by the Departmental Conference at the meeting held at the Bureau of Standards on February 13th, 1912, and approved by the heads of the several departments (to be known as the United States Government Specification for Portland Cement): Provided, however, that such specification may be modified from time to time by any similar Departmental Conference, with the approval of the heads of the several departments.

WM. H. TAFT.

The White House, April 30th, 1912.

IN PARLIAMENT.

(By Our Press Gallery Representative.)

British Museum Marble Work.

In the House of Commons, Mr. Tyson Wilson asked Mr. Wedgwood Benn, as representing the First Commissioner of Works, if he would state the reasons which influenced the Office of Works to permit the contractors for the marble work in connection with the British Museum to sub-let part of the contract abroad. Mr. Wedgwood Benn replied that in sanctioning the sub-letting of a small portion of the marble work at the British Museum extension, the Office of Works were influenced principally by the facts that such sub-letting was customary in the trade, and that the work in question could be executed more conveniently abroad.

Government Building Contracts.

Mr. Pointer asked whether, in view of the fact that the maintenance and repair work on the various Government buildings was more or less of a regular character, and that in many cases the same workmen had performed the work for years, although contracts had changed hands, further consideration would be given to

the advisability of employing these workmen direct and thus saving the profits of contractors.

Mr. Wedgwood Benn said that long and earnest consideration had already been given to the question of the advisability of employing direct the workmen referred to in the question. Where it was found desirable workmen were employed direct by the Department, but generally, it was found that the employment of workmen through contractors under the present system was more efficient and economical.

H.M. Office of Works.

Mr. Goldsmith asked whether there had been any increase in the clerical and architectural staff of the Office of Works since January 1st, 1907; and, if so, whether he could state the additional number of officials employed.

Mr. Wedgwood Benn said the increases in the staff since January 1st, 1907, were: 78 clerks, 5 architects, 18 assistant architects.

Replying to Mr. Goldsmith, Mr. Wedgwood Benn said the total amount spent by the Office of Works on new buildings, including the cost of certain sites during the year 1911-12, was £822,476, and on maintenance and repairs £587,868. The expenditure upon new works executed to designs prepared in the Office of Works for the five years ending March 31st, 1912, had amounted to £4,066,945. The total payment for salaries, etc., for the same period was £464,493, but a large proportion of this was for services not connected with the construction of new buildings.

Old Post Office Buildings.

Captain Jessel asked the Postmaster-General whether the old Post Office buildings at the corner of Newgate Street and St. Martin's-le-Grand were to be pulled down; if so, whether it was proposed to erect new buildings on the present building line; and whether the opportunities of future street improvements at this important corner had been considered.

Mr. Herbert Samuel said the old Post Office, which was being pulled down was not at the corner of Newgate Street, but was bounded by St. Martin's-le-Grand, Gresham Street, and Foster Lane. New buildings were to be erected on the site. It would be for the Corporation of London to make any suggestion with regard to street improvements. If they desired to do so he would be prepared to confer with them.

Lighting of the Chamber.

Mr. King asked Mr. Wedgwood Benn whether he could state what changes had recently been introduced in the lighting of the Chamber of the House of Commons; and whether the changes made had proved satisfactory.

Mr. Wedgwood Benn replied that two bays of four in the ceiling light were now converted to electricity and the First Commissioner proposed to complete the change during the recess.

BREVITIES.

The organ at St. Sepulchre's, Snow Hill, E.C., built by the famous Renatus Harris in 1670, and the oldest of the sixteen Harris organs in London, is to be repaired at a cost of £2,000, if the funds can be raised.

Bradford builders' labourers struck on July 22nd on the refusal of the employers to increase their wages from 6d. an hour to 6½d. Several employers have granted the advance.

A memorial window to the late Lord Kelvin is proposed for Westminster Abbey. Dr. J. H. Tudsbery, the eminent civil engineer, is hon. treasurer of the fund that is being raised with this object.

The City Corporation have received a letter from the London County Council offering to contribute £126,400, being one-half the net cost of the proposed widening of a portion of Leadenhall Street, on the understanding that they are not committed to any further expenditure over future widenings of that thoroughfare.

It is stated that the Royal Geographical Society was anxious to acquire, as its future home, Lowther Lodge, Prince's Gate, which was built in 1874 by Mr. Norman Shaw for the late Hon. William Lowther. It is one of London's finest town houses, and was offered at auction yesterday.

The new wing of Croydon Hospital which has been erected from the designs of Mr. Frank Windsor as a memorial to King Edward, and was recently opened, has cost £5,500.

A new parish hall recently opened at Shoreham, Sussex, contains two halls, the lower of which seats 600, and the upper 500. The architect is Mr. A. W. Nye, M.S.A., and the builders are Messrs. W. A. Gates and Son, of Shoreham. The total cost is expected to be about £1,500.

The Burnley Town Council has decided to buy from Lord O'Hagan 177 acres of land surrounding Townsley Park, which with the ancient hall is already the property of the corporation, at a cost of £19,000. This purchase is the first step in a town-planning scheme.

The contract for the erection of an enormous reservoir at Caballito, Buenos Ayres, with a capacity of 16,000,000 gallons, has been secured by a British firm—the Cleveland Bridge Co., of Darlington—in competition with leading firms of the United States, Belgium, and Germany.



Front View.



Rear View.

ROADSIDE COTTAGES, ROSEHILL, WILLINGTON-ON-TYNE.
EDWARD CRATNEY, ARCHITECT.

At a special congress of the Archaeological Society held in Great Russell Street, V.C., on July 22nd, it was resolved to urge upon the Parliamentary Joint Committee the desirability of including ecclesiastical buildings within the compulsory part of the Preservation of Ancient Monuments Bill. The resolution was moved by Mr. Aymer Vallance.

Strong complaints are being made of the merciless way in which the walls of both public and private buildings are being defaced by Sheffield hooligans. Architects," comments the editor of a local newspaper, "naturally advise beautiful stonework for important buildings; but from many points of view ordinary glazed bricks would be more serviceable."

The chairman of the Local Government Committee of the London County Council, replying to a question at a recent meeting, said that if the proposal to house London University on the Foundling Hospital site is carried out, it will be necessary to destroy a part, or perhaps the whole, of the existing buildings of the Foundling Hospital. Mr. Andrew Taylor, who asked the question, suggested that the buildings should be used for housing the London Museum.

A large and influential committee has been formed with the object of establishing an international memorial to the late Lord Bister. Details of the scheme are to be announced at a meeting at the London Mansion House in October. Lord Rothchild and Sir W. W. Cheyne are the treasurers, and Mr. J. R. Bradford has been appointed secretary, and communications should be addressed to the Royal Society, Burlington House, W.

The Metropolitan Water Board's new reservoir at Chingford, work on which has been in progress for about five years, is expected to be finished by next spring. It is to effect a huge lake, 30 ft. deep, having a storage capacity of 3,000,000,000 gallons, and covering 416 acres, the length of the outer embankment being four miles and a half. The engineer is Mr. W. B. Bryan, M.I.C.E., the contractors being Messrs. C. Wall, Ltd.



ROADSIDE COTTAGES, WILLINGTON-ON-TYNE: DETAIL OF ENTRANCE.

The Birmingham City Council have applied to the Local Government Board, under Part II. of the Housing, Town Planning, etc., Act, 1909, for their approval of a town-planning scheme with reference to certain land in Quinton, Harborne, and Edgbaston.

A Dr. Johnson memorial for Uttoxeter, on the spot where he did penance for his opposition to his father, is being promoted by the Johnson Society.

The houses associated with Dundee's famous personages are to bear memorial labels.

"We Britons," writes Sir Laurence Gomme to the "Times," "are certainly the most accomplished Philistines in the world," because we do not take sufficient care of our ancient monuments. "What is needed," he adds, "is a Bill to prevent English people from being humbugs by pretending to care for their history." If only Sir Laurence would draft that Bill!

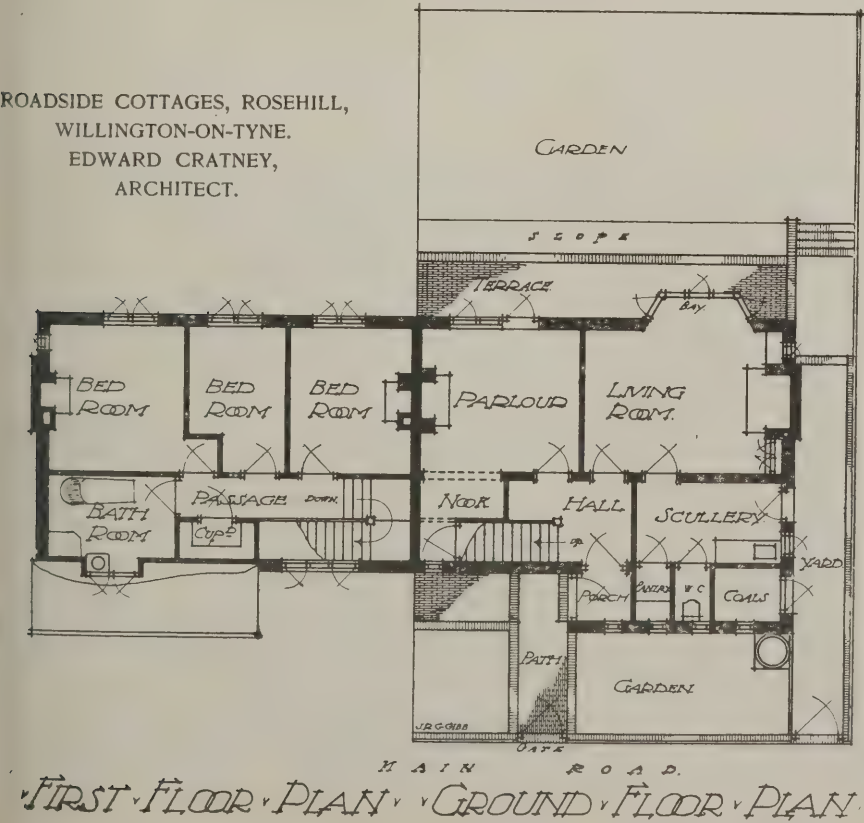
A new training college at Caerleon, for 100 men students, will be of three storeys, with a clock tower, and the contract price is £26,000. The foundation stone has just been laid, the architects being Mr. Alfred Swash, F.R.I.B.A., and his son, Mr. Frank S. Swash, A.R.I.B.A., and the builder Mr. F. Bond.

In order that London boys may have a better chance of holding their own against the youths from the provinces, the Education Committee of the London County Council has decided on a comprehensive scheme by which training for the building trade is to be given in all parts of London. The scheme, which will cost many thousand pounds, makes provision for the erection of a new school at a cost of £38,000 at Hammersmith.

The Immingham Docks, near Grimsby, which were opened on July 22nd by the King and Queen, have cost, so far, £2,600,000. The engineer is Sir J. Wolfe-Barry, the contractors being Messrs. Price, Wills, and Reeves.

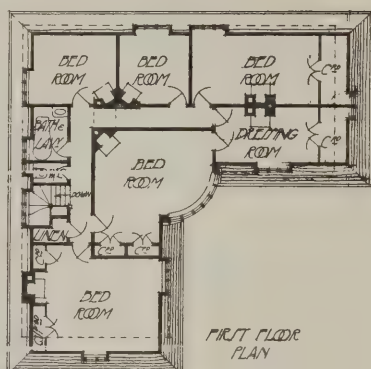
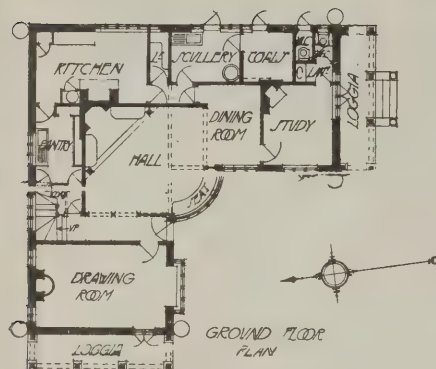
A cargo of Dutch bricks has arrived at Blakeney, a Norfolk port in the Wash. They are to be used in building a new hall at Kelling. This hall is for a Dutch gentleman, who intends to put up a building of the character usual in his own country. He has accordingly started by importing the building materials.

ROADSIDE COTTAGES, ROSEHILL, WILLINGTON-ON-TYNE. EDWARD CRATNEY, ARCHITECT.





View from South-West.



SCALE OF FEET

"THE DORMERS," PORTISHEAD.

BANISTER FLETCHER AND SONS, ARCHITECTS.

THE "DORMERS," PORTISHEAD.

This house has recently been erected at Portishead, near Bristol, from the designs and under the superintendence of Messrs. Banister Fletcher and Sons, architects. It stands in its own grounds of more than an acre. A good view of the sea from the hall living-room was desired, and, consequently, the plan adopted to meet the requirements of the owner was one in which the principal outlook should be to the south-west.

The construction to the sill level was in uncoursed random rubble of local stone, the quoins being also of that material, and the variable tints of the stone were mixed up as much as possible so as to assist the texture. The remainder of the wall was constructed of Cattibrook bricks, which were subsequently treated with a wash of lime putty and oil. The roof was covered with Bridgwater double interlocking Roman tiles, the hips and ridges being formed in semi-circular tiles. The concrete forming the ground floor throughout was floated in cement and covered with cork carpet direct, so that the use of timber in any form was obviated in this floor. Four-inch by nine-inch joists treated with a tar stain were used to support the first floor, with fibrous plaster slabs between them to form the ceiling to the ground-floor rooms. A comfortable ingle-nook was arranged in the north-east corner of the living hall, and the *raison d'être* of the

arched flue shown in the interior photograph was the shape of the plan, which necessitated gathering over the first-floor flues. A feature in the planning of the living-room is the dining recess, which can be curtained off, and has direct access to

the kitchen. This latter is also accessible from the front door without disturbing the privacy of the sitting-hall. The hall is heated by a "Nautilus" grate connected up to two small radiators, which distribute warmth to the passages. By removing the panelling between the pitch-pine uprights in the hall and the drawing-room, the whole of the sitting-room can be used *en suite*.

A CHURCH RESTORATION.

The Bishop of Salisbury dedicated recently the restored and enlarged Church of St. George, Fordington, Dorchester, one of the oldest and most ancient ecclesiastical edifices in his diocese. In the course of the works, which have been in progress for five years, a stone bearing a Roman inscription of considerable importance was discovered, and there is some reason to believe that a Roman temple as well as a Saxon church once occupied the site of the present edifice, in which traces of Norman work, including a sculptured group representing the achievements of St. George at the siege of Antioch, over the door of the south porch, are clearly visible. The prebend of Fordington was endowed by St. Osmund, afterwards Bishop of Sarum, and for several centuries the manor bearing the same name has been held by the heirs to the British throne. King George V., while Lord of the Manor, contributed liberally to the restoration fund. The tower of Fordington is one of the finest examples of perpendicular work in Dorset, and one of the striking features of the church is an Elizabethan dated stone pulpit, which has now been restored to its original form. From the designs and under the superintendence of Mr. J. Feacey three bays, with side aisles, etc., have been added to the nave, the building being carried out in Ham Hill stone, which from time immemorial has entered largely into the construction of all Dorset churches.

Lambeth Bridge.

Although the County Council are being asked to bring forward the old scheme for rebuilding Lambeth Bridge at a cost of £240,000, efforts are to be made (according to the "Standard") to persuade the Council to adopt a more costly scheme.



"THE DORMERS," PORTISHEAD: THE SITTING HALL.

R.I.B.A. EXAMINATION RESULTS.

The Preliminary.

The Preliminary Examination, qualifying for registration as Probationer R.I.B.A., was held in London and the Provincial centres indicated below on June 10 and 11. Of the 171 candidates admitted 49 were exempted from sitting and the remaining 122 examined, with the following results:

Centre	Number Examined	Passed	Relegated
London	64	39	25
Birmingham	7	4	3
Cardiff	8	3	5
Glasgow	6	6	0
Leeds	12	11	1
Manchester	20	15	5
Newcastle	5	3	2
	122	81	41

The passed candidates, with those exempted, making a total of 130, are as follows:—

Addison, J., Aberdeen.
Allen, G. D. P., Cambridge.
Armstrong, J. R., Edinburgh.
Ashby, L. J., Nottingham.
Atalla, M. A., London.
Bagshaw, A. S., New Cross, S.E.
Barnett, P. W., Hornsey, N.
Batstone, P., Lee, Kent.
Beirnsstein, P. V., South Kensington.
Bennett, G. G., Streatham, S.W.
Benson, H. A., Aldershot.
Bethel, F. G., Douglas, Isle of Man.
Bethell, C. C., London, N.
Blake, J. R., Malvern.
Bridge, T. M., Manchester.
Brown, J. B., Southsea.
Jalder, C. S. T., Edinburgh.
Card, R. W. G., Birmingham.
Carter, B. P., St. Anne's-on-Sea, Lancs.
Chapman, K. J., Sandstead, Surrey.
Chardin, R. E., Woodford Green, Essex.
Clamp, E. E., New Cross, S.E.
Clark, G. G., Seaton Carew, co. Durham.
Cottingham, G. B., Plumstead, S.E.
Cruickshank, D. E., High Barnet.
Cunnell, D. C., Norwich.
Das, M. N., Strood.
De, D., London, N.W.
De Kelsby, B., Heaton Moor, Stockport.
Derry, D. C. L., Hampstead, N.W.
Dougill, W. W., Bradford.
Dransfield, N. W., Birkby, Huddersfield.
Duncan, T. V., Knutsford.
Eurlacher, P. A., London, W.
Edwards, C. R., Hale, Cheshire.
Elliot, F. T., Pimlico.
Evans, S. R., Handsworth.
Ford, L. S., Cobham, Surrey.
Gard, T. F., Peckham, S.E.
Grancis, B. T., St. Austell.
Grancis, D. H., Merthyr Tydfil.
Graser, T. O., Kentish Town, N.W.
Grindiner, F. G. E., Bath.
Grinner, P. T., Southend-on-Sea.
Glover, D. S., Wandsworth Common, S.W.
Goder, F. E., Wellington, N.Z.
Goodwin, N. W., Cric-klewood, N.W.

Gordon, J. D., New-towards, co. Down.
Green, O. H., Lostwithiel.
Hanson, J. W., South Shields.
Hart, H. G., Dover.
Helliwell, H. C., Hr. Broughton, Man-chester.
Hewitt, A. K., Great Yarmouth.
Hodson, C. P., Bowes Park, N.
Hooper, A. F., Becken-ham.
Hosain, S. I., Man-chester.
Howell, H. J., Chester-field.
Howels, F. E., Hamp-stead, N.W.
Hughes, J. G., Hendre, Mold.
Illingworth, A. J. A., Liscard.
Jackson, E., Scar-borough.
Jackson, W., Caver-sham.
Jennings, T. H., Lon-don, N.W.
Kassem, H. Z., Fallow-field, Manchester.
Keith, J. L., Hamp-stead, N.W.
Kinna, K., Cheetham, Manchester.
Knight, D. E., West Bridgford, Notts.
Lawson, J., Dunfer-mine.
Leadam, E. G. S., Lon-don, S.W.
Lee, S., Newland, Hull.
Llewellyn, T. E. E., Cardiff.
Mackereth, E. G., Ul-verston.
McLean, J. M., Pais-ley.
Margerison, W. J., Calverley, nr. Leeds.
Martin, J. P., London, N.
Matthews, H., Stoke-on-Trent.
May, T. W. V., London, N.
Maynard, A., Levens-hulme.
Melhuish, J. B., Leices-ter.
Middleton, L. M., Lon-don, S.W.
Miller, W. A., London, N.
Morris, P., Nelson, Lancs.
Mullins, G. T., Hamp-stead, N.W.
Newrick, F. H., Sun-derland.
Nixon, K. B., Stock-port.
Osborne, O. C. G., Bournemouth.
Owen, G. E., Orford, near Warrington.
Papworth, F. C., March.
Paterson, H. F., Shef-field.
Paxton, N. R., Paisley.
Phippen, H. G., Clif-ton.
Picton, C. S., New Cross, S.E.

Pullan, B. S., Harro-gate.
Purvis, A. F., London, S.W.
Rahman, F., Liver-pool.
Rayson, A. A., Lon-don, N.W.
Reed, W. J., Blaydon-on-Tyne.
Rickatson, J., Market Weighton.
Roberts, H., Bangor, N. Wales.
Roberts, W. L., Bred-bury, nr. Stockport.
Robertson, D., Glas-gow.
Robertson, R., Calder-cruix, N.B.
Roff, O. A., Cambridge.
Schumann, C. L. G. J., Highgate Hill.
Shattock, L. H., Wim-bledon.
Shaw, F. L., Hull.
Shewin, M., London, N.W.
Shields, G., Bradford.
Smith, C. W., Bourn, Cambridge.
Soorma, T. S., Liver-pool.
Spence, A. T., Clap-ham, S.W.
Steelman, J. A., Edin-burgh.

Stephens, P. E., Pen-zance.
Stuart, C., jun., Kirk-caldy.
Tanner, S. T., Canton, Cardiff.
Tattershall, E. W., Hale, Cheshire.
Taylor, C., Dronfield, near Sheffield.
Todd, H. E., Clifton.
Uhrmacher, S., Dal-ston, N.E.
Valder, W. E., Croy-don.
Vergette, R. G., Swan-sea.
Von Berg, W. C., S. Croydon.
Wakerley, A. J., Lei-cester.
Waple, F. H., Stroud Green, N.
Ward, J. P., Belfast.
Warwick, J. G., Peter-borough.
Williams, L. J., Pen-zance.
Woodgate, J. A., Rams-gate.
Woodhouse, F. P. M., Wimbledon Park, S.W.
Young, W. W., Ar-broath.

The Intermediate.

The Intermediate Examination, qualifying for registration as Student R.I.B.A., was held in London and the undermen-tioned provincial centres on June 10, 11, 13, and 14. One hundred and nineteen candidates were examined, with the fol-lowing results:—

Centre	Number Examined	Passed	Relegated
London	82	42	40
Cardiff	5	4	1
Glasgow	4	2	2
Leeds	8	4	4
Manchester	15	4	11
Newcastle	5	2	3
	119	58	61

The passed candidates are as follows, their names being given in order of merit as placed by the Board of Examiners:—

Foale, W. E., London, W.
Rogers, J. C., London, W.C.
Wilshere, R. S., Fins-bury Park, N.
Shuffrey, G., Ealing, W.
Kaltenbach, A. F., Hornsey Lane, N.
Rolley, H. E., S. Ken-sington.
Toye, F. C. L., Wood Green, N.
Alison, W., Glasgow.
Rubery, S., Wolver-hampton.
Atchison, H. P. R., S. Kensington.
Martyn, E. A. L., Red-ruth.
Horsburgh, A. L., Lon-don, W.C.
Macpherson, J., Not-tingham.
Durnford, W. J., N. Kensington, W.
Thompson, J. O., Ec-clesall, Sheffield.
Prynce, S. J. H., West Kensington, W.
Parkes, E. M., North-wich.
Foster, W. S., East-bourne.
Farrer, J. C., London, E.C.
Gray, G. H., North Shields.
Lawton, W. V., Knaresborough.
Whitehead, P., Aln-wick.
Cruickshank, D. E., High Barnet.
James, C. H., Cardiff.
Woodhouse, C. H. M., Leicester.
Knight, W. J., Cardiff.
Kersey, A. O., St. Beo-lings, Suffolk.
Purvis, A. F., London, S.W.
Arnold, R. C., Ilford, Essex.
Stoner, A. P., North-ampton.

Child, E. H., Hamp-stead, N.W.
Skelding, P., Bristol.
Elsworth, L. A., Head-ingley, Leeds.
Nisbet, A., Portobello, N.B.
Bain, V., London, W.C.
Barry, C. A. R., West-minster.
Birnstingl, H. J., Ken-sington, W.
Blyth, C. K., Canon-bury, N.
Broad, M. C., London, W.
Clare, A. D., London, W.C.
Crossland, H. E., Sut-ton-in-Ashfield.
Edwards, J. R., Bris-tol.
Edwards, K. D., To-quay.
Fernyhough, S., jun., Handforth, Cheshire.
Goodwin, H. T., Black-heath.
Inman, G. H. N., Lon-don, E.C.
Maynard, F. J., Ley-tonstone.
Mitchell, A., London, E.C.
Mosse, P. G., Straw-berry Hill, Middle-sex.
Ripley, C. G., London, W.C.
Smith, H., Rawten-stall.
Soper, S. G., Brockley, S.E.
Sparrow, A. J., Leam-ington.
Stevens, T. J., Lon-don.
Stott, A. E., Liverpool.
Swallow, J. C., Letch-worth.
Tranmer, F., Harro-gate.
Wright, C. H., Ayles-bury.

The following table shows the number of failures in each subject of the Interme-diate Examination:—

I. Classic Architecture	30
II. Mediæval Architecture	43
III. Renaissance Architecture	44
IV. History of Architecture	39
V. Theoretical Construction	35
VI. Descriptive Geometry	22
VII. Applied Construction	29

Exemptions from the Intermediate.

The following probationers, possessing the certificates required under the regula-tions, were exempted from sitting for the Intermediate Examination and have been registered as students, viz.:—

Butler, A. S. G., Ken-sington, W. [Archite-tural Association Four Years' Course].
Garner, B. P., London, W.C. [Architectural Association Four Years' Course].
McKay, J. R., Edin-burgh [School of Art and Heriot Watt Col-lege, Edinburgh].
Martyn, L. D., Stock-well, S.W. [Architec-tural Association Four Years' Course].
Mayhew, G. M., Hitch-in, Herts [Univer-sity of London School of Architec-ture].
Robertson, D., Glas-gow [Glasgow School of Architecture].
Rogers, C. W., Putney, S.W. [Architectural Association Four Years' Course].
Shewen, London, N.W., [University of Lon-don School of Archi-tecture].

The Final and Special.

The Final and Special Examination, qualifying for candidature as Associate R.I.B.A., was held in London from June 20 to 28. Of the 118 candidates examined 46 passed and the remaining 72 were releg-ated in various subjects. The passed candi-dates are as follows:—

Allen, A. G. W., Round-hay, near Leeds.
Axten, H. J., Hornsey, N.
Bansor, T. P., Wake-field.
Barry, F. R., jun., Richmond, S.W.
Bennett, T. P., Kil-burn, N.W.
Bhedwar, S. K., Lon-don, W.C.
Booth, A., Barnsley.
Bridgman, G. B. (Special), Khartoum, Sudan.
Brownlee, H. J. (Special), London, W.
Cheston, J. A., Sutton, Surrey.
Cooper, A., Slough.
Dalglish, K., London, E.C.
Evans, C. G., Neath.
Gaunt, O., Hitchin, Herts.
Gilmour, T. G., (Spe-cial), Dennistoun, Glasgow.
Goldstraw, H., Hanley.
Green, J. W., Pitsmoor, Sheffield.
Harvey, J. C., North-ampton.
Holland, P. E., Bexley, Kent.
Honeyburne, E. H., Southport, Lancs.
Hughes, R. J., Llan-fairfechan, N. Wales.
Ingram, T. F., Lon-don, W.
Kay, J. W., Edin-burgh.
Maugham, J. R., New-castle-on-Tyne.

Moore, F. W., Keigh-ley.
Muir, R. G. (Special), Gerrards Cross, Bucks.
Openshaw, F. E. (Spe-cial), Oxford.
Owen, W. S., London, N.W.
Pickmere, T., Hamp-stead Garden Suburb, N.W.
Pope, T. C., Stamford Brook, W.
Putwain, W. S., Peck-ham, S.E.
Roberts, R. G., Shar-row, Sheffield.
Robinson, J. C., Mose-ley, Birmingham.
Schooling, S. P., En-field.
Scott, E. W. B., Lon-don, N.
Scott-Moncrieff, W. W. (Special), London, W.C.
Somerford, T. R., Brix-ton, S.W.
Spurr, W. R., Ossett.
Stooke, R., Sunder-land.
Sutcliffe, E. J., Hebden Bridge, Yorks.
Talvalker, V. R., Kil-burn.
Topham, G. R. G., Greenwich.
Warry, J. L., London, S.W.
Webb, P. E., London, W.
Whincop, W. G., Stoke Newington, N.
Williams, L. E., West Kensington.

The following table shows the number of failures in each subject of the Final Exa-mination:

I. Design	53
II. The Principles of Architec-ture	20
III. Building Materials	19
IV. Principles of Hygiene	39
V. Specifications	27
VI. Construction — Foundations, etc.	39
VII. Construction — Iron and Steel, etc.	54

*The Hon. Examiners, June Examinations, 1912.**Preliminary Examination.*

VII. Freehand Drawing: Mr. H. P. Burke Downing (F.).

Intermediate Examination.

I. Classic Architecture: Messrs. Arthur E. Henderson (Licentiate) and John A. Marshall. II. Mediaeval Architecture: Messrs. C. Wontner Smith (A.) and P. Leslie Waterhouse (F.). III. Renaissance Architecture: Messrs. Henry Tanner, jun. (F.), and Arthur T. Bolton (F.). IV. General History of Architecture: Messrs. W. A. Forsyth (F.) and D. T. Fyfe (F.). V. Theoretical Construction: Mr. Matt. Garbutt (F.) and H. A. Newton. VI. Descriptive Geometry: Messrs. E. R. Barrow (F.) and Alan E. Munby (A.). VII. Applied Construction: Messrs. Arthur Ashbridge (F.) and W. R. Davidge (A.).

Final and Special Examination.

I. Design: Messrs. Harry Redfern (F.) and E. A. Rickards (F.). II. Principles of Architecture: Messrs. Charles Spooner (F.), C. Harrison Townsend (F.), and F. W. Troup (F.). III. Properties of Building Materials: Messrs. H. D. Searles-Wood (F.) and A. H. Kersey (F.). IV. Arrangement of Buildings in relation to health: Messrs. Albert W. Moore (F.) and W. Henry White (F.). V. Specifications and Estimating: Messrs. Matt. Garbutt (F.) and Edward Greenop (A.). VI. Construction: Foundations: Messrs. Alfred Conder (F.) and W. E. Vernon Crompton (F.). VII. Construction in Iron and Steel: Messrs. Arthur Ashbridge (F.), Bernard Dicksee (F.), and Digby L. Solomon (A.).

The Final Examination: Problems in Design.

The Board of Architectural Education have approved the designs submitted by the students mentioned below who are qualifying for the final examination:

Subject I. (b).—A Terrace of Five Houses, Mr. K. Glover. Subject II. (a).—A Monument to an Explorer, Mr. K. Glover. Subject III. (a). A Detached Ball-room to a large Country House, Messrs. E. F. Bothwell, H. C. Bradshaw, R. S. Dixon, H. A. Dod, E. Gee, T. C. Lawrence, R. A. Barber. Subject III. (b).—A Landing Stage to a River or Lake, with a Restaurant, Messrs. H. Lidbetter, E. Prestwich, W. H. Thompson, R. A. Walter, W. E. Woodin. The designs of Messrs. K. Glover, G. C. Charlewood, and C. J. K. Clark in Subject III. have also been approved. Further lists of approved designs in this examination have appeared in recent issues of this journal, and the following additions have been handed to us: Subject III. (a), Messrs. E. H. Gibson and William Voelkel. Subject III. (b), Mr. George Crossley.

Newly Elected Licentiates.

At the Council meeting of June 24 the following candidates were elected Licentiates R.I.B.A. in accordance with the provisions of By-law 12:—

Abra, W. J., Ottawa, Ontario.
Adams, F. B.
Allan, D. L., Dundee.
Allan, J. A. O., Aberdeen.
Allen, E. G.
Badger, F. E. G., Liverpool.
Baigent, H. J.
Baillie, W., Glasgow.
Baker, H. G., Aldershot.
Barclay, W., Glasgow.
Barker, F. G., Liverpool.
Barker, H. M., Vancouver, B.C.
Barton, W. H.
Baxter, D. W., Dundee.
Baynes, W. A., Hanley.
Belcher, A. L.
Bell, G., Newcastle-on-Tyne.
Bembridge, A. N.
Bethell, L. B.
Bishop, W. M., Motherwell.
Black, A. B., Adelaide.
Blackett, W. A. M., Melbourne.
Blackshaw, W., Stockport.
Bladen, L. M. W., Gold Coast.
Blessley, H. D., Cardiff.

Bond, J. O., Norwich.
Botting, M.
Bradford, P. R.
Bray, E. H.
Bridges, O. A., Bognor.
Bright, W. F.
Brooks, A. E., Brisbane.
Brown, J., Stranraer.
Brown, T., Liverpool.
Browne, W. H., Calcutta.
Browning, H. Le C.
Burgess, H., Brighton.
Burgess, S. E., Middlesbrough.
Burnett, E. W., Colwyn Bay.
Caldwell, E. W., Glasgow.
Cammack, J. H., Liverpool.
Campbell, J. B., Govan.
Cane, H.
Cannon, F.
Chalmers, F. R.
Chapman, F. W., Sheffield.
Christian, O. W., Leicester.
Clark, W., Dundee.
Cockle, F. W.
Coldman, H. A.
Coleridge, E. W. G., Wellington, N.Z.
Cook, W. V., Ipswich.
Cooke, S. N., Birmingham.

Corblet, C. J.
Cossar, J. H., Derby.
Cowin, N. T., Pretoria.
Crathney, E., Wallsend-on-Tyne.
Crawford, C., Uddingston, Lanarkshire.
Crawford, J. W., British Columbia.
Crumbie, W. F., Dumfries.
Cross, A. G., Durban.
Cutler, A. F.
Dakers, W. S.
Daniel, F. J., Market Harborough.
Daniel, T. B., Saskatoon, Canada.
Davidson, J., Dumfries.
Dawson, C. F.
Day, J., Wakefield.
Deckman, H. A. C.
Dicken, A.
Dyer, C. H., Bloemfontein.
Dyson, E. W., Barnsley.
Edwards, F. R. L., Manchester.
Edwards, J. P.
Eltringham, J. J., Blackhill, Co. Durham.
Evans, E. H.
Evans, W.
Falcon, L., jun., Oban.
Fare, A. C.
Faunch, F. G., Ilford.
Fearnside, R. K., Cardiff.
Ferguson, W., jun., Canada.
Ferry, E. F.
Field, L. M., Portsmouth.
Fielding, W., Wellington, N.Z.
Fillary, A. A.
Fleming, F. L. H., Johannesburg.
Fletcher, G. H., Preston.
Flowers, H. H.
Foggie, T. K., Dundee.
Ford, W. H., Frankfurt, O.F.S.
Fordham, R. A., Peterborough.
Forsdike, W. A., Sheffield.
Foster, G.
Foster, W. T. B., Seaford.
Fowler, J. A., Ontario, Canada.
Freeman, F. R., Bolton.
Galbraith, A. W. de R., Zanzibar.
Gamble, J. G., Belfast.
Gardner, H. R.
Garipey, J. R., Montreal.
Garlick, E., Stalybridge.
Garvie, J., Gourock.
Gibson, R. M.
Gill, H., Nottingham.
Gill, W., New South Wales.
Gilling, F. G., Liverpool.
Gillman, A. C., Khar-toum.
Godfrey, L. H., Pretoria, South Africa.
Good, C. T., Adelaide.
Goodison, I. O.
Goodwin, S. H.
Goodwin, W.
Gosling, A. E.
Gould, G.
Goulding, E. F., Northampton.
Gray, J., Bonnyrigg.
Green, E. F., Gainsborough.
Grey, G. W.
Groat, P., Bristol.
Hall, C. W., Felling-on-Tyne.
Hamilton, A. D., Glasgow.
Hardie, A. M., Edinburgh.
Harding, J., Cardiff.
Hardman, J.
Harries, L. R., Penarth.
Harris, W. A.
Hart, G. A. J., Christchurch, N.Z.
Hawke, R. G., Glos-sop.
Haxton, A. D., Leven, Fife-shire.
Healey, W. E., Maidenhead.
Heaton, R. A., Wigan.
Heazell, E. H., Nottingham.
Heir, M. J., Johannesburg.
Henshaw, F., Andover.
Hibbert, A.

Hill, F. B.
Hill, R. J., Brecon.
Hodder, R. N., Johannesburg.
Hodgson, G., Alberta.
Hoets, J. G. D., South Africa.
Hofman, P. J. C., Pretoria.
Holdsworth, C.
Hollingworth, A. R., Manchester.
Holmes, G., Leeds.
Housley, F., Derby.
Hunt, A. C., Bournville.
Hunt, H. H., Rangoon.
Hunter, J. A. M., Manchester.
Hyams, H., Paignton.
Illingworth, W., Bradford.
Ingman, A. M.
Izard, J. G.
Jackson, C. E., Edinburgh.
Jackson, R. W., Lancaster.
Jameson, F., Liverpool.
Johnson, W. H., jun., Edinburgh.
Jones, C. P., Vancouver, B.C.
Jones, H. T., Cape Town.
Jones, R. C. F., York.
Jones, S. R., Leek Wootton.
Jupp, C. K., Templecombe.
Kay, G. H., Manchester.
Keighley, G., Burnley.
Keighley, S., Burnley.
Keith, W. D. B., Broughty Ferry.
Kerr, W., Alloa.
Key, J. W., Lewes.
King, O. O., Toronto, Canada.
Kirby, E. B., Liverpool.
Lain, P. E. C.
Laskie, A. G., Glasgow.
Latham, A. G., Birmingham.
Laws, H. J.
Leahy, W. J.
Lemm, J., Hongkong.
Lewis, G. E., D., Aberystwyth.
Lewis, P. S.
Littlewood, L.
Lloyd, T. A.
Lofthouse, A. W., Middlesbrough.
MacColl, R. B., Bolton.
McCubbin, D. A., Johannesburg.
Macdonald, C., Inverness.
McGovern, J. H., Liverpool.
Mackenzie, J.
Mackintosh, J., Edinburgh.
Macritchie, G., Fort William, Inverness.
Madgin, A. J.
Manuel, J., Colwyn Bay.
Mark, O. H., Durham.
Marshall, A. J., Edinburgh.
Martin, A. E., Montreal.
Masey, C.
Masters, F. N. D., Doncaster.
Mayell, R. Y.
Mesk, E., Wellington, N.Z.
Meldrum, A. R., Aberdeen.
Meston, A. C.
Miller, J., Glasgow.
Mitchell, J. H. H.
Mitchell, W.
Money, J., Glasgow.
Moore, H. E., Middlesbrough.
Moorhouse, G. G., Liverpool.
Morris, G. L.
Morris, W. R., Reading.
Mules, R. J., Rosyth, Fife, N.B.
Nash, W. A.
Nathan, P. P.
Naylor, C. H. R., Nottingham.
Newby, F. W., South Shields.
Newell, T.
Newlands, W., Kilmarnock.
Newton, P. G.
Nicholls, F.
Nicholls, W. H., Madras.
Nicholson, A. T., Preston.

Nicoll, J. P., Wellington, N.Z.
Nunn, F. R., Colchester.
Oliver, C., Hull.
Page, G. M.
Page, W. M., Wellington, N.Z.
Palmer, F. M., jun., Burton-on-Trent.
Parsons, F. B., Birmingham.
Peake, F., Manchester.
Pearce, N. B., Edmonton, Alberta.
Percival, J., Manchester.
Phillips, J., Wakefield.
Pluck, J. E., Colchester.
Prairie, E., Montreal.
Prentice, A. G.
Prescott, O. E. T., Wigan.
Prestwich, H. O., Leigh, Lancs.
Pritchett, H. D., Darlington.
Purdie, T. S.
Pyott, G. A., Dundee.
Rankin, W., New York.
Richardson, H. T., Shrewsbury.
Riddle, W. P., Hull.
Roberts, C. H., Invercargill, N.Z.
Robertson, D. W., Edinburgh.
Roe, G. A. M.
Ross, J. McG.
Rossiter, H. E.
Rothwell, E., Hastings.
Rowley, A. J., Canada.
Royds, A. F.
Rushton, T. J.
Ruthin, C. T., Swansea.
Salkeld, T., Kendal.
Sanderson, L. N., Scarborough.
Saunders, J. T.
Scholte, A. H., South Africa.
Schwartz, G. G., Wellington, N.Z.
Seaman, A. E.
Sewell, R. V. T., Teignmouth.
Shanks, W., Johannesburg.
Sharpe, D., Dundee.
Shebbeare, H. V.
Smith, E. H., Walsall.
Smith, G. H.
Smith, H. V. C., Dublin.
Smith, W. C. C.
Spoor, S. M.
Stains, L. R.
Stedman, J., Kinross.
Stenning, P. E.
Stephenson, S. J., Newcastle-on-Tyne.
Stevenson, W. C., Devon.
Still, J. E.
Stirling, W., Colombo, Ceylon.
Storry, T. T.
Strong, J., Liverpool.
Symon, A. A., Arbroath.
Taylor, E.
Taylor, H., Barnsley.
Tebbs, W. A., Alnwick.

Thomas, C. F., Cardiff.
Thomas, E. J., Bristol.
Thomas, O. T., Haverfordwest.
Thomerson, A.
Thompson, A. J.
Thompson, A. H., Airdrie, N.B.
Thomson, D., Dundee.
Thomson, J. B., Bognor.
Thomson, J. M., Airdrie.
Tinslay, T. P.
Tobias, M.
Tomkins, S. E.
Tomlinson, C. W., Leeds.
Triffitt, C., York.
Tucker, A. H., Worthing.
Tufnail, H. P., Bognor.
Vasy, J. M. H., Sunderland.
Vinycomb, J. K.
Waddell-Dudley, F. G.
Wade, W., St. Anne's-on-Sea.
Wainwright, R., St. Helens, Lancs.
Walker, J. C., Liverpool.
Walker, W., Leven, Fife-shire.
Walsh, J.
Ward, C. J., Cardiff.
Wass, F. J.
Watkin, A. C. H.
Watney, D.
Watson, H. B., Vancouver.
Webb, J., Ipswich.
Webber, H., Calcutta.
Webster, D., Saskatoon.
Weightman, F. N., Newcastle.
Welch, H. J.
Wemyss, R., Glasgow.
Weston, S. I.
White, T. K., Newcastle-on-Tyne.
Whitmore, S. W., Pretoria.
Whyte, R., Helensburgh.
Whyte, W. McN., Glasgow.
Wicksteed, A. F.
Willett, J. H.
William, G.
Williams, H. P., Halifax.
Williams, J. M., Glamorgan.
Williamson, J. St. Clair, Ayr.
Wills, J. R.
Wills, W. F., Derby.
Willson, E. H., Abertillery, Glams.
Wilson, A. V., Motherwell.
Wilson, A. G., Canada.
Wittet, J., Elgin.
Witts, F. H.
Worrow, F.
Worrow, H. J.
Wrathmell, J. E., Stockport.
Wray, J. R., Middlesbrough.
Wright, O. H. C., Toronto.
Young, J.
Young, W. G., Cardiff.

Theses for the November Examinations.

Candidates who propose applying for admission to the November Final and Special Examination should at once submit for the approval of the Board of Architectural Education the subject and titles of their theses. Candidates may select one of the following:—

1. *Historical Architecture*, implying as far as possible the direct study of actual historical buildings.

2. *Science, as applied to Building*. By this is intended a special study of an application of science to definite problems of building.

3. *Design, including Decoration*, such as a study in civic, monumental, decorative, or other branch of architectural design.

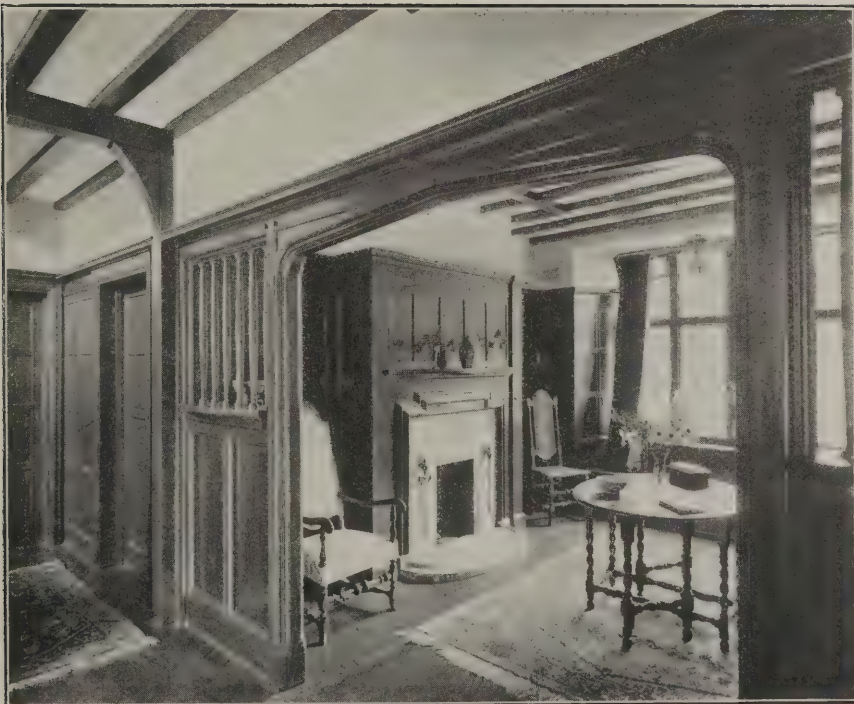
The subject selected for the thesis is to be notified for the approval of the Board four months before the date of the examination, and the thesis itself is to be submitted four weeks before the same date. The thesis, which may be either an illustrated essay or a design with a detailed report, will be assessed by examiners specially appointed for the purpose.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
AUGUST 14th, 1912.

Volume XXXVI.

No. 917.



HOUSE AT PRENTON, CHESHIRE: THE HALL.
BRIGGS, WOLSTENHOLME, AND THORNELY, ARCHITECTS.



DOORWAY IN WALNUT BEDROOM, 11, HILL STREET, LONDON, W.
J. LEONARD WILLIAMS, F.R.I.B.A., ARCHITECT.

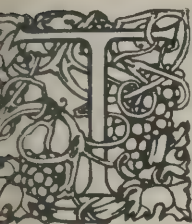
THE ARCHITECTS' & BUILDERS' JOURNAL.

AUGUST 14th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 917.

The Journal of Roman Studies.



THE second issue of the *Journal* of the "Society for the Promotion of Roman Studies"* contains naturally a good deal of matter which concerns general questions of Roman History, which do not come within the scope of an architectural journal. But there are two papers which do not come into this category. One of these is the long paper by Professor Haverfield, the President of the Society, on "Roman London"; the other is a short but rather remarkable paper by Professor van Buren, on "A Determining Factor in the Development of Roman Architecture."

No one who lives and works in London ought to be different on the subject of London under the Romans; and Professor Haverfield's paper is a very interesting and learned summary of what is known and what may be reasonably concluded on the subject. What is known is, he thinks, far less than ought to be known; and the reasons for this deficiency are precisely of the same kind as those which have led to the bad laying out of modern London, of which we hear so much now, viz., want of a general system of study. London is full of remains of Roman occupation, which have been discovered from time to time by different persons, sometimes by intentional exploration, more often by accidental discovery in the course of building operations. But no adequate effort has been made to compare and co-ordinate these in a systematic manner. He compares the result, to our great disadvantage, with the results of German investigation at Treves, where the ancient city was buried by as thick a covering of houses as Roman London; yet the German archaeologists have recovered with a very small outlay of money, nearly the whole of the Roman street-plan. In London we do not know for certain the plan of a single house on the line of a single street in the Roman city. This, says Professor Haverfield, is the difference between the trained archaeologist and the Englishman whose "ability" is his all. Many of us are interested in the past history of our country and of its capital, but the interest has not taken the form of systematic work. Professor Haverfield is able to give a plan of modern central London with the portions which formed part of the Roman city indicated broadly by red hatching, but that is all. Details have never been put together and compared; and for much of this work it is now too late. For the future the existence of the Society will probably lead to more organised study, but in the meantime much has been lost which can never be recovered.

Professor Haverfield commences by pointing out the almost geographical necessity for the position of London as a capital; the fact that its excellent harbour opens towards the continent; "the whole traffic that came from

the Roman empire, whether from northern Gaul or from the mouth of the Rhine, was geographically bound to pass the site of London." The choice of the precise spot on the banks of the Thames estuary where London was founded may have been influenced by other and more local considerations, but we agree that its position somewhere on that estuary seems to have naturally arisen from geographical circumstances. Whether London (Londinium) existed as a city before the Roman occupation seems to be doubtful; if it did, it was only an unwalled trading settlement. Its first Roman phase was also as an unwalled town, situated in the eastern half of what is now called the City. The Roman bridge is known to have crossed the Thames some 500 ft. eastward of London Bridge. The path of the Roman wall has been fairly accurately traced, but its precise date cannot be fixed. It apparently was built well clear of the then existing city, as it is planted on the clean gravel subsoil, and does not pass over earlier structures. It is set on a foundation of clay, mortar, and rubble, and is bordered at intervals of about three feet with double or treble layers of tiles which run right through the wall. On the next page we give a drawing of it by Mr. Reader. The fact that the ditch is such a small one seems to indicate that the city was not at that time considered of great military importance, otherwise the fortification would have been of a much more complete character; it was mainly a commercial city. The half-round bastions of which many traces have been found, and which are not bonded into the main wall, would seem to indicate that when they were built the wall was regarded as of more importance in a military sense; bastions are put for the protection of the wall between them from assault. These bastions contained many fragments of Roman carvings, old stones from other buildings used up. It has been argued from this that the bastions are entirely post-Roman. Professor Haverfield says this opinion is "quite untenable," but does not say why. To our thinking the facts are in favour of the post-Roman view. It is much more likely that old Roman buildings would be used as building-quarries after the Romans had withdrawn than while they were still in occupation.

As to the population of London during the time of Roman occupation in England, Professor Haverfield gives many reasons for thinking that it was a population of Romans or of thoroughly Romanised people. The numerous mosaic floorings that have been found are not, as he truly says, very good art; they are admired rather because they are ancient and Roman than for their intrinsic merits; but the existence of these and many pieces of decorative pottery prove that there was a highly civilised life in the city during Roman times. In 1830 an altar with a sculptural relief of Diana, of very fair workmanship, was dug up under the Goldsmiths' Hall, proving that the worship of Roman deities was carried on there. Then there are carvings executed in marble which is not English; things belonging to some important Roman official who had migrated to or been ordered to London, and had brought his own art treasures with

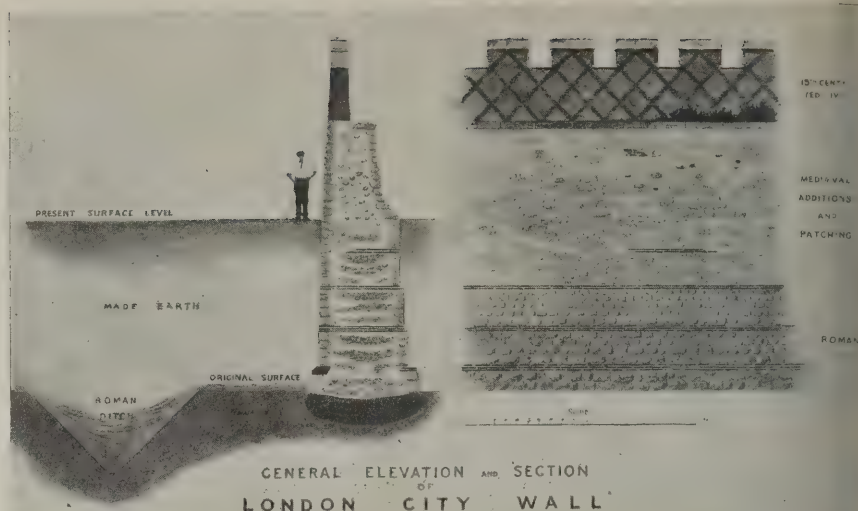
* "The Journal of Roman Studies." Volume I., Part II. Office of the Society for the Promotion of Roman Studies, 19, Bloomsbury Square. 158.

him; we noticed one such example the other day among the contents of the London Museum at Kensington. One of the most curious pieces of evidence of the Roman character of the London population of the period is the bounding tile dug up in Warwick Lane in 1886 (of which a photograph is given in the Appendix), on which is scratched a complaint in Latin that Augustalis (apparently a workman) has been absenting himself from his own business every day for a fortnight. This is taken as a proof that the very labourers used the Latin language; but that is hardly a necessary conclusion; it might have been a memorandum made by an overseer or foreman of works. But it all helps the picture of a London absolutely Roman during the third and fourth centuries A.D.

And what became of London when the Romans withdrew from Britain, when they could no longer spare the men and the resources to keep up their province? That is one of the most curious points of all. London disappears from view for two centuries. The last mention of it in literature is 369 A.D., but coins have been found showing its existence down to the beginning of the fifth century. After that there is impenetrable darkness for two centuries. It was probably laid waste, like other Romano-British towns, by the Saxon invaders. Thus it seems to have two separate histories; it flourished and disappeared as a Roman town, and after a long interval began a new development as a British town. Professor Haverfield considers its geographical position was in both cases the factor that led to its importance; but he has a moral to draw from this in regard to modern London. "The discovery of the steam engine, the opening of the Atlantic to ocean-borne traffic, the opening of the English mineral resources to commerce, have shifted the geographical centre of our island from the south-east coast and the Thames to the west and the north." The effect of that will be felt upon London eventually, though it may be a matter of some centuries.

And now for Professor Van Buren's "Factor in the Development of Roman Architecture," the other paper in the *Journal* to which we have alluded. He has suggested rather a new idea, perhaps open to question. It is this, that the Roman predilection for large spacing in their colonnades and for vaulted interiors on a large scale arose originally from their extensive use of timber in building, coupled with their scientific knowledge of the problem of constructing large-span trusses in timber. The mere fact of the frequent conflagrations in Rome before the Imperial era shows that timber must have been largely used in the buildings, and that Augustus found Rome not only a city of sun-dried brick, but also of wood. But with the use of timber they would have got into the habit of spanning much larger spaces than the Greeks could; and when the building law of Augustus, and perhaps also an increasing scarcity of timber, led more and more to the employment of more durable materials, they set to work so as to use stone or concrete vaults to obtain the same spaciousness which they had been accustomed to in timber buildings or with timber roofs.

There is something in this; it seems at all events to explain the Roman method of building up the back of the auditorium of a theatre in solid walling, in so many instances, instead of adopting the Greek practice of taking advantage of a hollow in the configuration of the ground and filling it with stone seating. There can hardly be a doubt that the pre-Empire theatres in Rome were built of wood, and in that case there would have been no difficulty whatever in building up the auditorium off a flat site. When theatres began to be built in stone, this method of building up from the ground was continued,



and the back of the Orange theatre represents in stone what was formerly done in timber.

The author explains also the greater angle of the Roman pediments, as compared with the Greek, by the fact that they followed the line of roof formed by the timber truss, a construction which the Greeks did not understand. The unscientific method of the Greeks in timber construction, as far as they employed it at all, is evident from the fact that the purlins in the roof of one temple, as shown by the holes in the masonry left for them, were square in section, and there is no doubt that Professor Van Buren is quite right in his conclusion that the higher pitch of the Roman pediment was the consequence of the Roman use of the timber truss for the roofs, which could not be satisfactorily constructed at a less slope than that for the principal rafters. But the most important point in the paper is the suggestion as to the built-up theatres and their wooden prototypes.

The Foundling Hospital.

IN reference to the proposal to take the Foundling Hospital site for London University, Captain Swinton, in a letter to the *Times*, makes some criticisms which ought to be taken into account. He is certainly right in saying that such a scheme would necessarily involve the demolition of the hospital building, which is an interesting building of its date, with a good deal of history connected with it, but it is pretty certain that it could not be worked in as part of a new London University building. Moreover, the cutting down of a good many of the trees in the grounds would probably follow; in fact, a very pleasant and interesting corner of old London and a quiet and delightful open space would be sacrificed, while, as he contends, the London University might much better be built on a more conspicuous site. He also suggests that the Foundling Hospital building would afford an adequate housing for the London Museum, with sufficient space, and in a conveniently central situation. Whether the building is really large enough for this is a matter one could not express an opinion about without specially examining it with that object; but if it is really large enough it is certainly suitable in other respects. At all events, it seems a great pity that such a delightful bit of old London as the Foundling Hospital and its grounds should be destroyed unless its site is really necessary for other purposes.

The Victoria and Albert Museum.

A COMMITTEE consisting of Professors Blomfield, Selwyn Image, and Gerald Moira, have made a report to the Board of Education in regard to the treatment of the staircase and gallery leading to the lecture theatre. This is, we presume, what was the Ceramic gallery, which we gather is now to be put to other uses. The report approves of the removal of the

tained glass windows on the staircase, because they were in bad condition; it is also intimated that they interfered with the light; but the principal window on the staircase was a rather good specimen of the Renaissance type of design applied to stained glass, and it seems a pity that it should have been removed; it was a kind of memorial of the work of some of the men who assisted to make the museum what it is. If the gallery is no longer to be used as a Ceramic gallery, the present design of the columns is considered unsuitable, and it is recommended that they should be removed and plain columns erected, created in accordance with the scheme of decoration of the gallery. Also that the stained glass in the gallery should be removed, as unsuitable to the situation, and interfering with any use to which the gallery may be put. These, if we remember right, are a series of exhibits of old glass; in that case some other place for their exhibition should be suggested. One cannot help thinking that it might have been well, before recommending any of these alterations, to have settled what is to be the future use of the gallery, which appears to be uncertain at present.

"Adams Work."

WE are glad to see Mr. Percy FitzGerald drawing attention in the "Times" to the common error of referring to the work of the Brothers Adam as "Adams" work. As he says, in art notes and auction sales we constantly hear of "the brothers Adams," of "Adams work," "an Adams chimney-piece," and of "the Adams's" generally: in fact for years past we have been hearing of this "Adams" work, with the curious result that the family name of a distinguished race has insensibly been changed into another. Mr. FitzGerald fears that, the custom having been so firmly established, these graceful designers will in the future always be spoken of as "the Adams brothers" and their productions as "bits of Adams work"; but we are not ourselves so devoid of hope: on the contrary, we feel that by drawing attention to the error on every possible occasion it may eventually be got rid of. "Adam work" may sound strange in the mouth of some people at first, but, we hope, will ultimately be taken as the familiar term. At the same time we can see the difficulty of overtaking an error which has had a good start, and in this connection we recall, with some amount of despondency, that even well-informed writers are guilty of "bannisters"; while "the old folks at home" have an expression securely fixed in the mind of the public through the medium of a negro ditty.

While referring to the work of the Brothers Adam we could take occasion to point out that it is easy to charge the authors with having degenerated into femininism, but many a house to-day is proud in its possession of Adam decorative work, the architectural merit of which is being increasingly recognised.

The Old General Post Office.

THE practice of re-erecting portions of fine old buildings which it is found necessary to demolish from time to time is apparently growing in favour. The proposal to rebuild the façade of the old Manchester Town Hall is still fresh in the memory, and now we hear that there is a movement on foot to preserve the portico and pediment of Smirke's General Post Office in St. Martin's-le-Grand, for re-erection in Shadwell Park. It is lamentable when necessity involves the demolition of some fine old public building, and the loss is made more apparent when a design far inferior to it in architectural character is prepared for the site. In the present issue Mr. Lionel B. Budden gives an interesting account of John Foster's Custom House at Liverpool. Here again we have an instance of the unsuitability of a fine old building to the needs of the present day. In this case the architect was undoubtedly to blame in many respects—for instance, in errors of judgment in planning and in the disposition of the building with respect to the cardinal

points; but its demolition has been threatened quite apart from these considerations. No architect can be expected to foresee that the shifting centre of commerce will, within a century, have left his building stranded—forsaken and comparatively useless. And in such circumstances as these the necessity for demolition is all the more to be regretted. However, there is hope, as our readers will see, that the Liverpool Custom House may yet be adapted internally to present-day requirements, and thus be assured a further lease of serviceable existence.

The case of the General Post Office is apparently altogether different. The work of the G.P.O. would appear to have completely outgrown the accommodation of the old building—even so far as to defy readjustment and alteration by the Office of Works. Consequently the building was condemned to destruction, and the only consolation for the admirers of its familiar façade is that there is some faint chance of the re-erection of its portico and pediment in a public park.

If we have not been misinformed, the interior is already in a dismantled condition, the glazing even having been removed from the skylights, greatly to the detriment of whatever fitments there may be left inside. We understand that the Shadwell Park Memorial Committee have not yet accepted the offer of the Office of Works, which was made at the instance of the London County Council; so there is still the possibility that we may even be denied the preservation of only a small part of Smirke's fine design.

The Value of City Property.

WHAT is perhaps the highest sum ever proposed to be given for the use of a doorway has just been offered to the Rector and Churchwardens of St. Michael's, Cornhill, who are the happy possessors of an eastern boundary wall in St. Michael's Alley. The Hong Kong and Shanghai Bank propose to build new premises in the alley and desire to make an opening in the wall to serve as an ingress and an egress to and from the bank. No public thoroughfare will be created between St. Michael's Alley and Gracechurch Street. For this right they are prepared to pay £1,500—£500 of which will be handed to the churchwardens for parochial purposes and £1,000 will be devoted to the erection of a new Rectory. The Chancellor of the diocese readily granted a faculty to enable the scheme to be carried through, and congratulated the parish in having a boundary wall which is of no use to the church, and is able to be utilised for the purpose of increasing its revenue.

A HOLIDAY COMPETITION.

AS announced in our issue for last week, we see no reason why the architect should be left out of the current phase of holiday competitions, so we have instituted one. As already pointed out, architects frequently take a camera with them when away on a holiday, and are thus able to secure a record of many interesting buildings, or details of buildings, which are quite out of the ordinary class of illustrations: perhaps a little Renaissance house which has passed almost unnoticed, a piece of good ironwork, a fine old barn, or a delightful example of a wayside cottage. Photographs of a hundred-and-one such things are taken, but never published. We, therefore, invite such photographs, and will pay a fee of 5s. or 10s. 6d. (according to the value we place on them) for each which we reproduce. Prints should, preferably, be on glossy paper. It is optional whether they are mounted or not, but the name and address of the sender must appear on the back of each. The photographs must have been taken this year. There is no stipulation as to size, but as they are intended for reproduction, the larger the better. It is desired also that competitors should send with their prints a brief description of the work shown.

THE LIVERPOOL CUSTOM HOUSE AND ITS ARCHITECT.

BY LIONEL B. BUDDEN, M.A.

The proposal to provide Liverpool with a new Custom House has drawn attention to the architectural importance of the old building, which is the chief work of John Foster, F.R.S., a once famous Greek Revival architect. A most interesting study of both the building and its architect is presented by Mr. Budden in this article, which has been specially written for "The Architects' and Builders' Journal."

THE proposal to provide Liverpool with a new Custom House has in some measure directed public attention to the old building, whose defects and disadvantages are more generally appreciated than its merits. It must be confessed that, whilst the former are very real and practical, the latter are abstract and æsthetic, but they are nevertheless such as to deserve careful consideration and to provoke some sort of attempt to rescue from oblivion the name of a once famous Greek Revival architect, John Foster, F.R.S.

Foster was born in Liverpool about 1787, and was the son of a builder and surveyor to the corporation of that city. He received his early professional training from his father, afterwards studying in the London offices of James and Jeffry Wyatt. Thence he proceeded to the consummation of his training, a Continental tour. Choice of destination was denied him, as it was at that time denied all other English travellers. The Napoleonic wars had left open Turkey and Turkey only. We accordingly find him, in the summer of 1810, at Constantinople, where, for the first time, he is encountered by Charles Robert Cockerell, who had set out from England a few months later, also with intentions of architectural study.

From Cockerell's journal* it is sufficiently evident that the temperaments of the young men were then as dissimilar as the ultimate expressions of their art. With significance Cockerell observes: "The men I chiefly live with are Sir W. Ingilby, Foster, an English architect and a most amusing youth, and a Mr. Charnaud. . . . We meet at dinner very often, but they are all, even architect Foster, too idle to be companions any further than that." In fact, from various other allusions of this kind one sees that Foster spends his time in smart society and the Embassy set, and exhibits no more than an amateur interest in architecture.

But gradually the personality and enthusiasm of Cockerell has its effect. Foster is infected with a passion for research, and finally becomes Cockerell's inseparable companion. Their intimacy begins with a series of short excursions in the neighbourhood of Constantinople—to the mouth of the Black Sea, to the Prince's Islands in the Sea of Marmora, and so on. About the middle of September, 1810, together with Ingilby, they set sail for Greece, stopping on their way to pay a visit to the plain of Troy, thence by Tenedos and Lemnos to Salonica, and so on to Scyros, Andros, and Delos, at which latter place they made several slight attempts at excavation, and did a little measuring and sketching. After dropping Ingilby *en route*, Cockerell and Foster arrived in Athens, in the beginning of December, 1810.

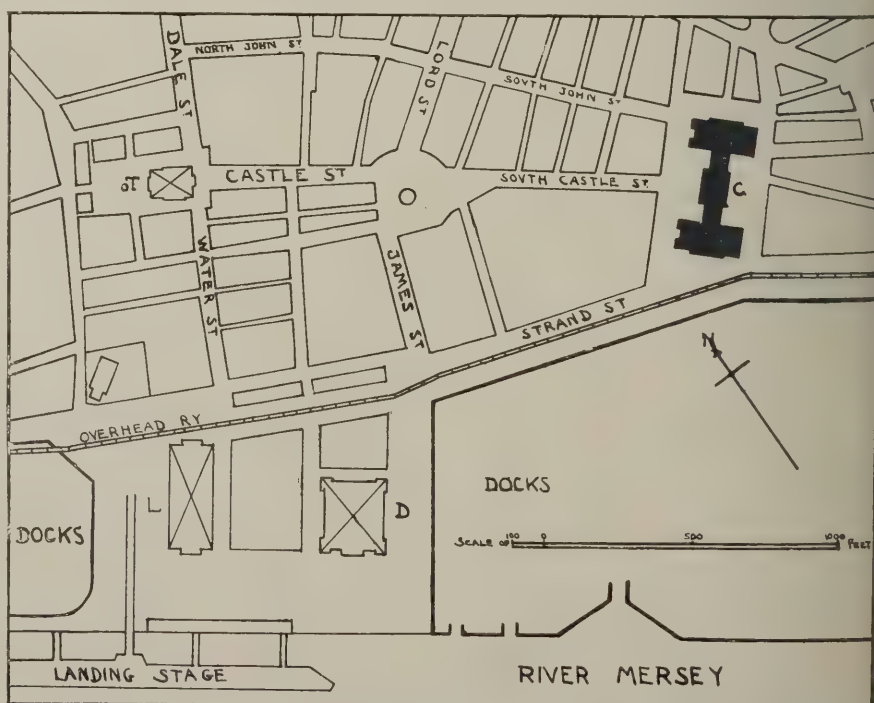
They were at once received into the distinguished clique of architects, painters, and archaeologists then resident in the village—Baron Haller von Hallerstein, Linckh, Baron Stackleberg, and Bronstedt. For both Cockerell and Foster it was the beginning of a connection which

brought with it possibilities of distinction and reputation, possibilities which good fortune, courage, and assiduity translated into definite achievements. The winter of 1810-1811 they spent studying in Athens, in a house which they had taken for the purpose, the local khan being, as usual, quite unfit to accommodate European travellers. In the spring of 1811, with Haller and Linckh, and a body of servants and workmen, they paid their famous visit to Ægina, in which they excavated, measured, and made an accurate restoration of the temple, and crowned their performance by discovering the sculpture of the tympana. This Foster, with the assistance of Linckh, secretly and under cover of night, to avoid threatened opposition on the part of the natives, conveyed to Athens, whence it was later smuggled out of the country.

After an excursion to Eleusis, Cockerell and Foster next joined Gropius, Haller, and Linckh on a tour of the Peloponnese, visiting Olympia, Bassæ, Megalopolis, Kalamata, Sparta, Argos, Tiryns, Epidaurus, Mycenæ, and Corinth. At Olympia a little research and excavating was attempted, though not prosecuted very seriously, as the party was too discouraged by the practical difficulties of the site, which the silt of the Kladeus had uniformly covered to a depth of 10 ft. to 12 ft.* But at Bassæ a series of preliminary studies were made of such promise as to cause the expedition to determine to return with an adequate escort and company of workmen and undertake the complete restoration of the temple.

* NOTE.—The site has since been thoroughly excavated, and its buildings and statues accurately "restored" by the German Expedition of 1875-1881. As at Delphi, a museum has been erected and contains the tympana sculpture of the temple of Zeus, etc.

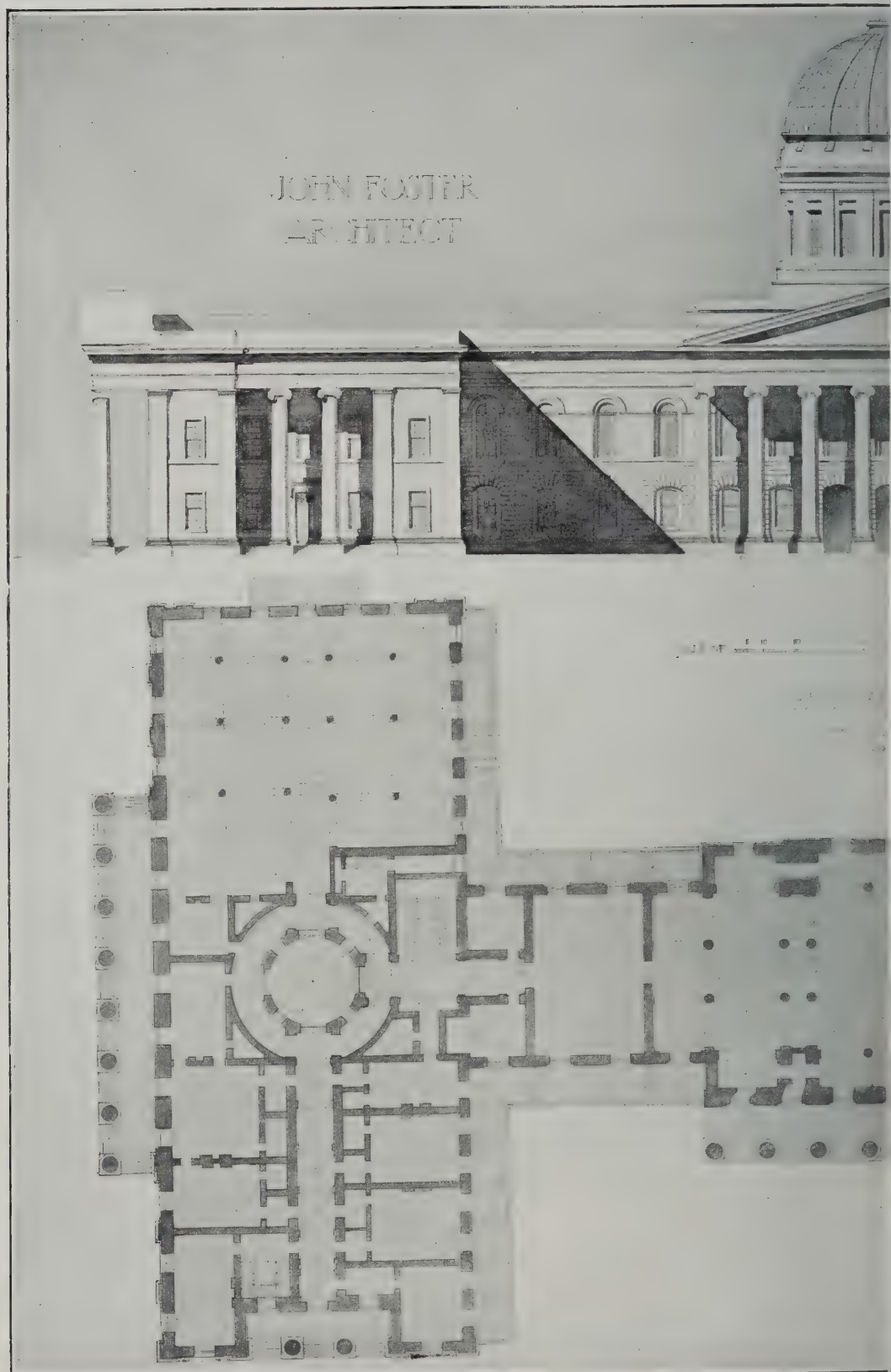
In the meantime, almost immediately after their return to Athens, Foster and Cockerell sailed for Crete with the intention of proceeding to Egypt. Their plans in regard to the latter destination were, however, frustrated by continuous bad weather. So, after being royally entertained by various Turkish pashas, they diverged to the Cyclades, and thence to Smyrna—where Foster met his fate, and the termination of their intimacy resulted. Cockerell makes the announcement of the tragic event in his journal, and his mood is obviously one of annoyance: "I have suffered not a little from the changeableness of companions," he complains, . . . "and now finally Foster has fallen in love, and refuses to make with me the tour of the seven churches, as he promised, because he cannot tear himself away from his lady-love." The reader of Cockerell's journal is in some measure prepared for this catastrophe. However profoundly Cockerell was able to influence Foster—and there is no doubt that through him Foster's æsthetic salvation was effected, a process in which, by the mere force of example, Cockerell transformed him from a casual dilettante into an artist of concentrated purpose and unremitting industry—yet an innate susceptibility to feminine attraction remained ineradicable. From the start Foster's mind seems to have been tainted. He left England wearing a "miniature of a lady," with which nothing would induce him to part, although one native headman coveted it greatly. In Constantinople Cockerell mentions the Charnowskis, a Polish family, "the ladies of which are . . . especially admired . . . of Foster, who has fallen completely under the thumbs of these beautiful sirens." No sooner has Foster arrived in Athens than



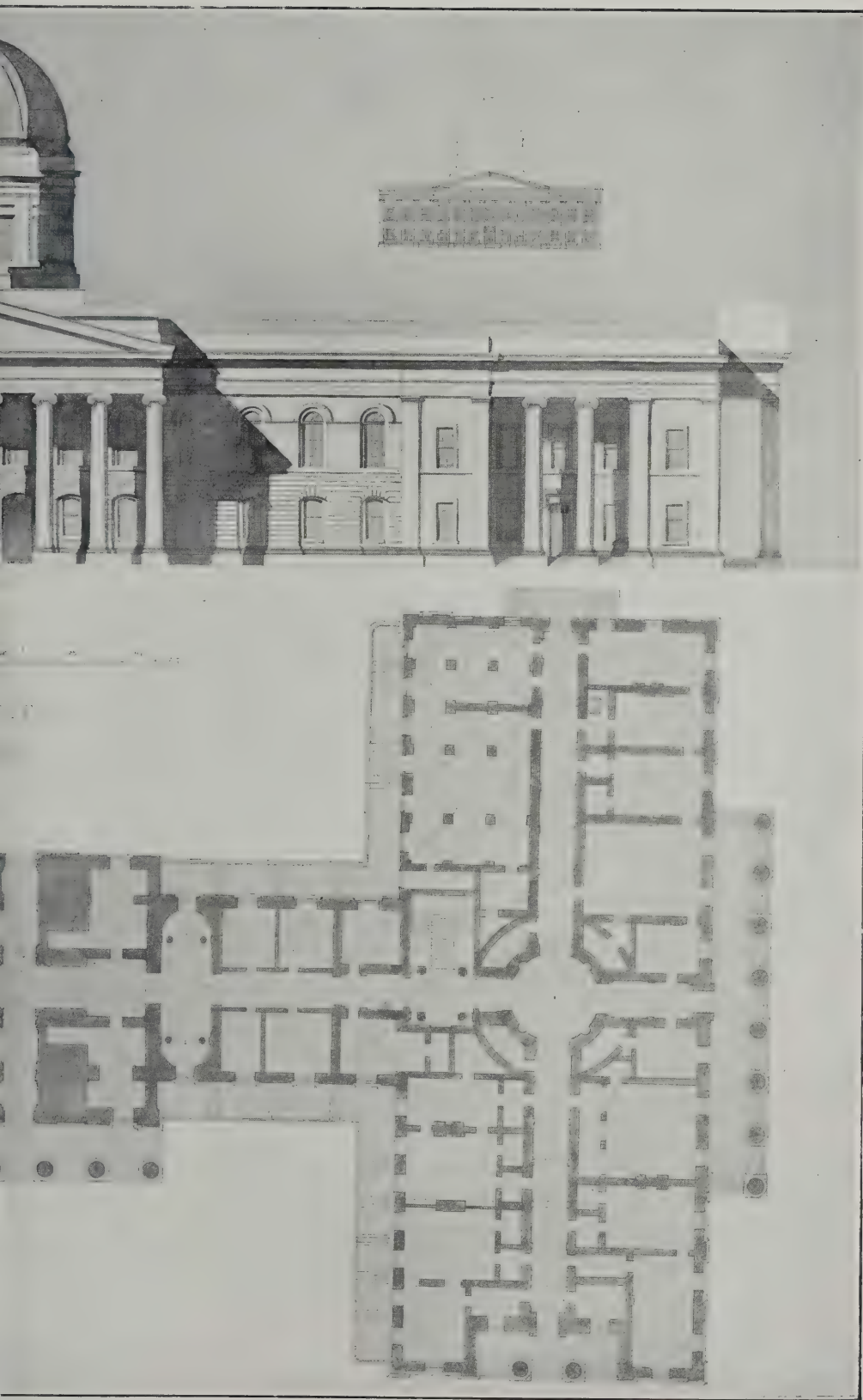
SKETCH MAP SHOWING POSITION OF CUSTOM HOUSE, LIVERPOOL.

C, Custom House; T, Town Hall; L, Liver Building; D, Dock Board Offices.

* "Travels in Southern Europe and the Levant, 1810-1817"; edited by S. Pepys Cockerell.



THE CUSTOM HOUSE, LIVERPOOL. MEASURE



AND DRAWN BY LIONEL B. BUDDEN, M.A.



THE CUSTOM HOUSE, LIVERPOOL: NORTH FRONT. JOHN FOSTER, F.R.S., ARCHITECT

(See also Centre Plate.)

Cockerell records that "he has received a love-letter," in the shape of symbolical tokens, "from (let us hope) some unknown Greek beauty." Later, during their visit to the Cyclades, there also occurs in Cockerell's journal the grim observation: "Foster found nothing of interest except numbers of pretty girls, some of whom were so pressing that he found it difficult to get away alone." It would appear that Foster was attractive as well as susceptible, and though it is improbable that in appearance he equalled Cockerell, his looks may have conveyed a more hopeful impression to feminine eyes than could be derived from the austere beauty of his companion. In any case, at Smyrna came the coup-de-grâce to his career of devastation and intrigue, and Cockerell departs alone to explore the coast of Asia Minor, sails to Malta, and on to Sicily, and after engaging in successful and valuable research returns to Athens.

During this time, whilst Cockerell was travelling, Foster seems to have summoned up sufficient strength of will to return to Athens himself and formed one of the party—Haller, Linckh, Stackleberg, Gropius, Brondstedt, and Leigh—who paid a second visit to Bassæ and successfully dug up and removed the sculpture discovered by Cockerell on the occasion of the first attempt at excavation. The second expedition was a costly and elaborate affair, and occupied nearly the whole of the summer

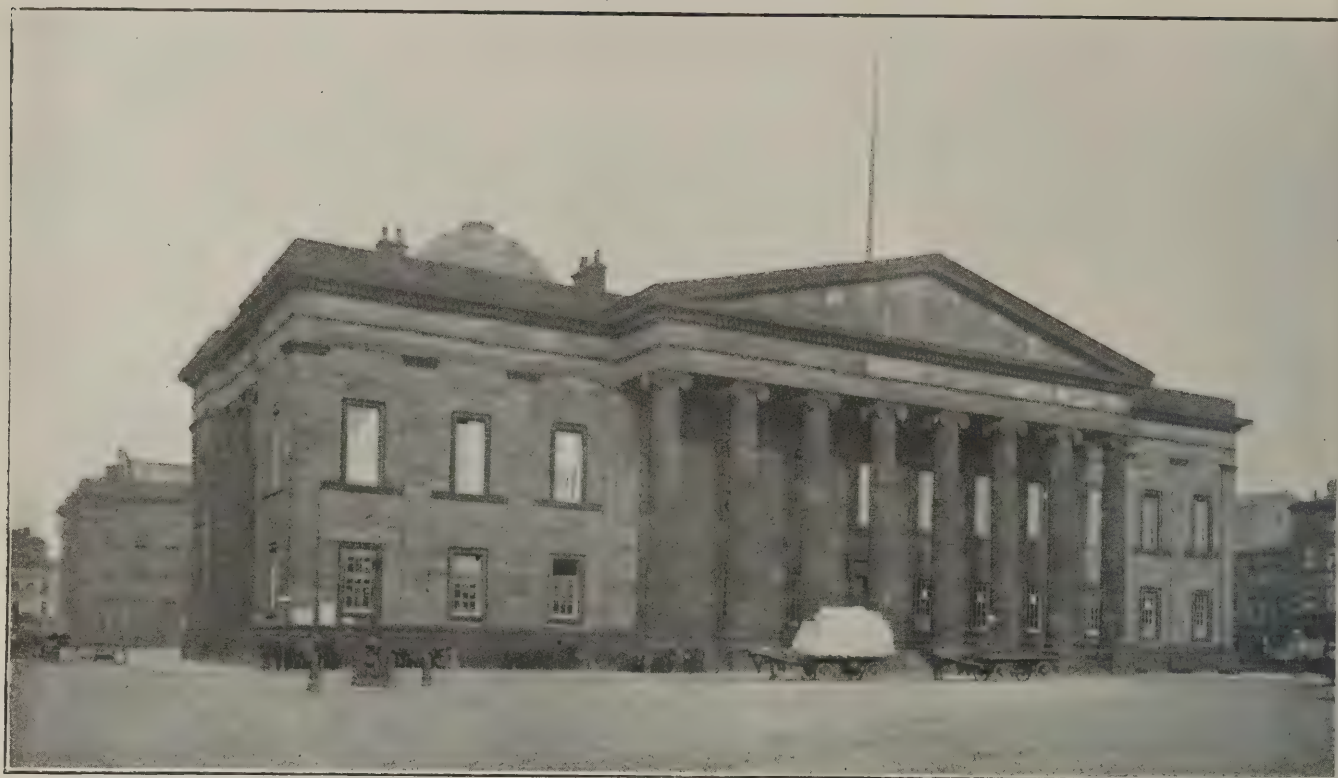
of 1812. It was also attended with considerable danger, and the party were in the end fortunate to escape with only the loss of the single Corinthian capital of the votive column of the temple. (This the Turks forced them to abandon, and destroyed before their eyes. One of the two extant records of it is Foster's drawing in the Phigaleian Room of the British Museum.) A brief stay in Zante, during which he saw Cockerell once more, and Foster again departs for Smyrna, there "to make a marriage very displeasing to his family with a Levantine." And so the last authentic record of his sojourn in the East leaves him under a barely respectable cloud.

In 1814 he returned to Liverpool. For a short time he carried on a private practice, with the assistance of his brother, but he was soon called to his father's post of architect and surveyor to the corporation. In this capacity his European reputation as an archæologist gave him an additional weight and authority. During the next twenty years the architecture and public improvements of Liverpool may be said to have owed whatever character they possessed to the taste and influence of Foster. It would be idle to claim for him a high degree of genius in his art. He came of that capable and trustworthy stock of English architects, born and bred in the tradition of eighteenth-century design, whose chief merit consisted in the sobriety

of their taste and in the soundness of their knowledge of classic precedent in composition and detail, qualities not likely to achieve anything very remarkable, but yet providing assurance against the occurrence of serious blunders.* There is no doubt that Foster's archæological experience gave him a more intimate insight into the purest types of form than could be possessed by the ordinary home-trained architect; and from his larger work it is abundantly clear that his sense of scale was far above the average; but these considerations apart, it would in many cases be difficult to distinguish his work from that of several of his contemporaries.

One of his first commissions was the Presbyterian church of St. Andrew in Rodney Street. In this he attempted to combine an *in antis* arrangement of Ionic columns with superimposed towers dominically roofed and having a Corinthian order attached. The result is discouraging. The towers are considerably under scale, and their introduction appears an inexplicable *gaucherie*, since the design without them is more or less satisfactory. The lower portion has, in fact, some of Foster's best characteristics. It gives an impression of great size, though its actual dimensions are fairly modest, approximately 85 ft. long by 40 ft. high. And it has that

* His father built the old Liverpool Exchange from designs by Wyatt about 1803. The façades harmonised with Wood's Town Hall, and were vastly preferable to the Victorian structure which has replaced them.



THE CUSTOM HOUSE, LIVERPOOL: WEST FRONT. JOHN FOSTER, F.R.S., ARCHITECT.

(See also Centre Plate.)

air of reserve and dignity which Foster seems to have attained in all his works.

Of his other performances the more noteworthy are his church for the Blind School in Leece Street, a design that is externally a literal reproduction of the Temple at Ægina and a profitless though pardonable exercise under the circumstances; the old Lime Street Railway Station, whose unpretentious low façade contributed by contrast far more to the effect of St. George's Hall than does the building which has since been erected; the St. John's Market, a covered area of nearly two acres in extent; and the Churches of St. Michael and St. Luke; and lastly, his *chef d'œuvre*, the Custom House.

In sheer size this structure is not merely one of the largest in Liverpool, but in the Provinces, and its situation and plan are no less remarkable than its dimensions. It is built upon the site of the old dock, once known as "the cradle," the original centre of the commerce of Liverpool. To fill up the dock and prepare the surrounding area—now Canning Place—involved an expenditure of £180,000, but at the time when the work was undertaken (1827-1828) so strong and general was the conviction that the whole maritime business quarter of the city would group itself about the selected position that no doubts were raised as to the wisdom of a vast outlay. Time has shown that judgment to be completely at fault. The commercial quarter has moved steadily northward and to-day the Custom House stands isolated amongst warehouses and small shops, its forecourts frequented by the unemployed, the loafing casuals and human derelicts that always gravitate toward the least respectable locality in any sea-port, half its rooms unoccupied and about it an air of dreariness and stagnation.

Built as the fifth of a series* and with the express intention of typifying Liverpool's greatness and prosperity as a sea-

port—and incidentally of rivalling Gandon's Dublin Custom House—the scale on which the work was projected is explicable enough. The Liverpool Corporation, in the fulness of its pride, determined to make the most generous provision for the adequate execution of the design and entrusted Foster, as their architect, with an opportunity the like of which few architects of his generation ever enjoyed, and such as was denied most unfortunately to Cockerell. The financial burden of the undertaking was, at the suggestion of the City Council, partly borne by the Government. From the "Liverpool Mercury" for June 23rd, 1837, we learn that "the arrangement between the Government and the corporation was that the latter should give the land, valued at £90,000, that the building should be erected by them, and that at the expiration of twenty years from the date of its completion the building should become the property of the Government, the latter paying the Corporation the sum of £150,000 by instalments of £25,000 annually." The total cost of the building when finished (exclusive of site value, etc.) was almost exactly £250,000, *i.e.*, it cubes at 9d., though to-day for similar workmanship and material at least 1s. 2d. or 1s. 3d. would have to be allowed.

The foundation-stone was laid on August 12th, 1828, by the Mayor of Liverpool, Thomas Colley Porter, Esq. From local newspaper accounts the ceremony was evidently a prodigious affair, involving immense processions of trades and business gentlemen, endless banquets, boat races, fireworks, and decorations. During the nine years which elapsed before the building was ready for occupation, there are continual references to it and its author in contemporary publications. Thus, in Bain's "History of Lancashire,"* published in 1836, there is the following typical allusion: "The edifice is being erected by John Foster, Esq., the

architect to whose professional skill Liverpool is indebted for so many of her proudest triumphs of art. . . . It will probably be completed and opened in the course of the year 1836." Actually, it was not finished till the following year.* It then housed the Excise Office, the Stamp Office, and the Post Office, each of which was introduced to impart facilities to the other in conjunction with the Customs departments.

In main outline the shape of the building on plan is that of a wide H, the longitudinal axis of which runs from north-east to south-west. The principal elevation faces north-west. Over the centre rises a dome on an astylar drum; below it, on the north-western side, is an octastyle Ionic portico; similar porticoes occur on the north-east and south-west elevations respectively. The north-west façades of the wings have the Ionic order of the porticoes arranged *in antis*. Round the three inner sides of the courtyards formed by the projecting wings is an area 10 ft. in width, required to light a basement. Communication between the courtyards is obtained through the centre of the building (under the dome) by means of three open vaulted passages on the ground level.

The internal planning is, or rather was before numerous alterations in recent times, upon symmetrical lines. The chief entrances were in the middle on either side of the vaulted passages bisecting the building, and central doorways on every façade admitted direct to corridors which marked the longitudinal axes both of the connecting portion and of the wings. At their intersection in the wings occur circular funnel-like halls, top-lit by concealed domes. Grouped about these halls are lining the corridors were all the various office-rooms of the different departments. On the first floor the arrangement is repeated except in the case of the middle portion immediately beneath the dome

* NOTE.—Its predecessor is scornfully referred to, in the *Liverpool Mercury*, August, 1828, as "an antiquated brick dwelling-house."

* NOTE.—Vol. iv., p. 174.

* NOTE.—*Liverpool Mercury*, June 23, 1837, "Now nearly ready and will shortly be opened for business."

Here was the great "Long Room" used for board meetings, a chamber 150 ft. by 70 ft., its central portion covered by an inner dome (55 ft. in diameter and rising on depressed pendentives some way up into the drum of the external dome), and the remainder by a flat coffered ceiling, supported on Ionic columns 25 ft. high; the whole giving the impression of a classic church-crossing, with small transepts and a nave and chancel of equal length running respectively south-west and north-east.

Measuring through the porticoes in that direction, the extreme length of the building is 466 ft. 8 in. and the over-all length of the wings 224 ft. 7 in., their width 94 ft. 4 in., the length of the central mass 252 ft., and its width through the north-west portico 95 ft. The total height from the plinth to the blocking is 66 ft. 10 in., and from the basement level 80 ft. 6 in.; above this the dome rises another 72 ft. Of the order, the depth of the base and plinth is 7 ft. 6 in.; the full height of the columns, including the cap and base, 50 ft. 9 in.; the diameter of the shaft immediately above the base 5 ft.; the depth of the architrave 4 ft. 2 in., of the frieze 3 ft. 7 in., of the cornice 3 ft. 10 in., and of the blocking 4 ft. 6 in. The ground-floor is 6 ft. above the flagging of the courtyard and the height of the rooms on the ground floor 20 ft.; on the first 21 ft. 6 in., except in the "Long Room," where it varies from 25 ft. to 55 ft., and on the second 15 ft. 6 in. Altogether the structure covers 6,700 superficial yards. Its erection consumed a million and a half cubic feet of stone and over ten million bricks. The whole of the basement is vaulted for bonded or condemned goods; these vaults are lighted by thirty-three windows 5 ft. by 5 ft.; the ground floor by eighty-four windows 10 ft. 6 in. by 5 ft.; the first by 102, thirty of which are 17 ft. high and the remainder 12 ft. 6 in.; both series are 5 ft. wide; lastly, the second floor is lit by ninety-seven windows 5 ft. by 5 ft.

From a glance at the accompanying sketch-map it will be seen that for so vast a building the site has many disadvantages. The space in which it is set is too circumscribed. Its size cannot be fully grasped. Such a design required for its realisation a broad surround, formally laid out and conceived so as to reinforce its immensity. A haphazard assortment of warehouses, nowhere more than 100 ft. back, hemming it in on three sides, and on the fourth the steel track of the Overhead Railway cutting obliquely across the foreground and missing the south-west angle by rather less than 60 ft., do not constitute a *milieu* calculated to assist the production of any great effect. An additional drawback is the way in which streets enter this narrow margin regardless of all principles of axial disposition and without any attempt having been made to widen them sufficiently to take in complete features of the building as vista-terminations. Thus, South Castle Street is just sufficiently off the transverse axis of the Custom House for the fact to be uncomfortably apparent, and the width of the street is just too little for a complete view of the north-west portico to be obtained, the two end columns and the angle of the pediment being cut off on either side. There is, again, no direct vista from the Town Hall to the Custom House, though that also might easily have been assured, and with great benefit to both, at the time when the latter was erected. It would, however, have been

altogether contrary to the traditional attitude of the civic authorities toward town-planning had any such far-seeing action been taken.

To come to a criticism of the design itself:—

Sir John Picton, in his "Memorials of Liverpool,"* severely censures the design and its situation—in a style oddly reminiscent of Fergusson. "Soon after the great improvements in the town under the Act of 1825," he observes, "the corporation in an evil hour determined to demolish the Old Dock, the cradle of Liverpool commerce, and to erect on its site a large Revenue building. . . . As to locality, nothing could have been more suitable for a dock, and as to site nothing more unsuitable for the erection of a large building. . . . In size the Custom House is one of the three great buildings of the town (St. George's Hall and the Town Hall being the other two). The first view of the building conveys to the mind a general impression of heaviness, which it requires some consideration to account for, since the proportions of the order employed, the Illyrian Ionic, are by no means the heaviest of those in general use. Every part is severely classical. Each moulding has been accurately measured, and the minutest details are no doubt strictly *en règle*, yet life is wanting, sadness and gloom predominate to an almost painful degree. May not the principal reason for this be that in the three principal fronts the desire to be strictly classical has choked and stifled the least manifestations of original thought? Each front, *except the one on which the sun principally shines*, has an advanced portico with pediment. Each wing has a recessed portico. Pilasters or ante break round the angles, and these arrangements, with windows few and far between, constitute the design. There are no indications such as are stamped on every line of St. George's Hall, of careful study and creative power. The only portion of the exterior which bears anything like a cheerful expression is the south (*sic*) façade, which, being considered the back of the building, was not thought worthy of the severe classical dignity of the other fronts. The simple ranges of arched windows with the breadth of rusticated wall associated with them and the depth of the masonry above crowned by a bold entablature, without either portico or pilasters, give a noble simplicity and unity of effect, combined with that pleasing play of lines which a range of arches in perspective always produces.

"Another cause of the heaviness of the building is the bareness with which it is carried out and the material with which it is built. A Greek temple constructed of white marble, glistening under the blue sky of Athens, its mouldings encrusted with carving, its frieze adorned with sculpture, and probably glowing with brilliant colour, would present a very different aspect from the most slavish copy of the same building in the murky and moist atmosphere of Liverpool, built with dingy sandstone, with the omission of all the sculpture which gave it life and character.

"The dome has been severely criticised for its nakedness and poverty, but in justice to the architect it should be stated that the original design had a ring of columns round the tambour which would have produced a fine effect, but which were omitted for economy's sake.

"The interior presents the same character of gloom indicated by the exterior. The 'Long Room,' could it be lighted

from above, is capable of some grandeur of effect. The staircases, which in buildings of this class are worthy of the most careful study and may form magnificent features in the design, are paltry in the extreme and utterly unworthy of a building of any pretension."

It must be confessed that, in many respects, Sir John Picton's criticism is sound and balanced, though it is a very partial statement of the case. With the development of the city, the position of the Custom House has become less and less convenient. Gradually its rooms have been vacated for better situated quarters, one department after another—the General Post Office, the Inland Revenue, office, etc.—being transferred to the centre of the town, so that now the building is more than half empty. But, unfortunately, not before drastic alterations were attempted in its interior arrangements in an endeavour to make them conform to modern requirements. At either end the great colonnaded "Long Room" has been crudely portioned off and subdivided, the north-east portion being further disfigured by the introduction of a large staircase and a mezzanine, whose floor-level exactly bisects the column shafts. Between the still-occupied ends of the "Long Room," its central and originally most magnificent portion immediately below the dome has been relegated to the obscure function of a general lumber store. Its stone-flagged floor is piled high with the *débris* of discarded furniture, fire grates, and paint-pots. The surface of the richly-coffered plaster ceiling and inner dome has faded to a dull grey. The stone shafts, bases, and caps of the graceful pseudo-Erechtheion columns have a grimy coating of dust. Above the inner dome, occupying the space between it and the wooden trusses which support the outer shell, stands a complicated scaffolding, condemned many years ago by the Board of Trade, but still suffered to remain. The suggestion that the room should have been top-lit would have greatly increased its effectiveness if carried out in the manner adopted in *Les Invalides*, where an opening, à la Pantheon, in the crown of the inner dome, admits light laterally derived through the drum. That ideal arrangement is discarded for a wood-framed lantern, whose sides are of thinly patterned and coloured glass, which permits a faint light to filter through—a scarcely satisfactory substitute under any circumstances. The room is, in fact, dependent for its light on the arcaded windows behind the columns; and in more than one instance the position of these is such that their jambs have to be skewed to convey the light inside. This is typical of only too much of the interior planning. The principal staircases in either wing are not only meanly designed, but badly lit from skylights. Insufficiency of light is characteristic of every corridor, since all are dependent on what may be borrowed from doors and a single terminal window each. When all is said in favour of the interior of the building, which does undoubtedly possess many lofty, well-proportioned and even well-lighted rooms, the bulk of the planning is obsolete and bad from every point of view. There are innumerable dingy ante-chambers, whose intended function it is impossible to conceive, and a paucity of staircases which is as remarkable as it is inconvenient and is accentuated by the total absence of lifts. The relation of rooms to each other is rarely satisfactory and always wasteful, whilst the roofing of the whole and the management

* NOTE.—Vol. ii., p. 143.

of the flues is one vast, unsightly muddle that is fully visible from many points of view and damages the entire design.

Nevertheless, the destruction of the building, as has been so often proposed, would be a disaster. It is the interior only which is useless. If the greater part of that were removed, a process that could easily be carried through without affecting the stability of the external fabric, the average thickness of which at the ground-floor level is 4 ft., and if it were replaced by a modern scheme of offices, lifts, etc., and roofed in a simple manner, the result would be most satisfactory. Possibly some such reconstruction may be under consideration at the present time, as there appeared in the "Liverpool Daily Post and Mercury" for May 9th, 1912, the announcement: "... the Government are not going to part with the old Custom House buildings, for which they have been offered £27,000. They may be able to use these buildings in connection with the Insurance Act and other social schemes in the future."

Criticism of the Exterior.

In regard to Sir John Picton's criticism of the exterior of the building, he is again just though a little inclined to labour his point against its classicism. The wing porticos, for example, are not ineffective on account of their formality, nor because they are denied sunlight. Both at different times enjoy several hours' sunshine each day and give very valuable light and shade effects. Moreover, the more closely a portico approximate to a Greek architype the more certain it is of being *in itself* a perfect form of expression. It is rather the fashion in which the porticoes are applied that there arises the impression of dissatisfaction one receives on viewing them. Though Foster scrupulously distinguishes between the elements of his composition and secures absolute definition of reading by the introduction of an anta respond, the effect in this case is merely one of disconnection. From any lateral point of view it is seen that the great pediments run back only a little distance behind the blocking and there abruptly end, appearing at the apex some 10 ft. clear and entirely unrelated to any system of roofing. The result is disconcerting and gives an air of unreality to the design at those points. It becomes unconvincing—so unconvincing, indeed, that, in view of the fact that it must have been apparent from the first, the wonder is that no effort was ever made to remedy it.

These objections do not in any way apply to the north-west portico, whose pediment dies into the attic base of the dome in a thoroughly satisfactory manner. In addition, the vistas obtained through the arcaded openings connecting the courtyards under the portico almost compensate for the circumstance of the colonnade itself only receiving obliquely the rays of the declining sun.

The admiration Sir John Picton expresses for the south-east elevation is reasonable enough, in so far as it concerns the central portion, where there is something of the simplicity and breadth of a Florentine palace, but he omits to mention that the short wing façades on either side are damaged in appearance through the necessity of approaching their central entrances by side stairways, even meaner and more awkward than those of the interior. The fine *in antis* treatment of the north-west elevation, with its broad flight of steps ascending between the columns, is replaced by features too paltry to be comparable.

The Dome.

The treatment of the dome is one of those mysteries with which the history of the building's construction appears to abound. A persistent rumour exists in Liverpool that the figure of Britannia at present crowning the dome of the Town Hall was originally intended to rest on the flat cup of the Custom House dome. But as the figure was *in situ* some time before the Custom House was ever built, that theory should be exploded. Then the omission of the colonnade to the drum of the dome is generally attributed to distrust of the bearing capacity of the substructure. In point of fact, however, Sir John Picton is right. The building is extravagantly solid at this part and it was from motives of economy only that the columns were omitted. It is beyond question a great loss to the whole design, though the silhouette of the dome and drum as it exists is distinctly good; in particular the actual transition between the two is well managed. Still, the spreading profile which a ring of columns would have given (altogether apart from the intrinsic beauty of such a feature) is really required, both to give apparent abutment to the dome and to build up a better composition above the portico. A drawing preserved in the Liverpool Office of Works shows the intended order to be a very severe Corinthian, whose capitals, however, do not harmonise as successfully as those of the existing flat antæ with the ribs and copper sheeting of the dome—which latter, incidentally, is in admirable keeping also with the Greek Revival spirit of the whole design.

The Building Material.

Finally, there is the question of the material in which the building is executed. It is built of "Park Stone," a local freestone much used in Liverpool at the beginning of the nineteenth century. Unfortunately, like so many architects of the Greek Revival, Foster must have credited it with the qualities of Athenian marble and thought out his design as if its execution were to follow in that material. Then, in workmanship it reveals the accurate carefulness and solid construction on which he always insisted, but there is none of the telling vigour or subtle gradation of surface that Elmes and Cockerell knew so well how to extract from stone. The design is rendered flat in consequence. Its shallow modelling, even surfaces, and delicate profiles, the exact values of its window spacings and its proportions, the carefully adjusted ratio of void and solid, in short the simple virtues of pure line and absolute form on which so much reliance was placed, all that is rendered largely ineffective in a sooty obscurity more detrimental to such a conception than anything else could well be. In Bain's "History of Lancashire" (1836; vol. iv.) there is a drawing of the building by T. Allan. In parts the illustration is conjectural, but the south-west façade is correctly rendered and shown as if constructed of white marble. The result is admirable and wholly unlike that which has been actually obtained—that oppressive drabness, that air of predestined desolation invoking neglect.

None the less, with all its defects, and they are very great and very numerous, when the worst has been said of the design and of its material, Kohl's description of it as "unquestionably one of the most magnificent pieces of architecture of our age" is not unjustifiable. He "compared it favourably with other colossal piles in Berlin, Munich, and Paris"; and it will bear

comparison. For the work possesses great qualities—massiveness, austerity, and fine scale. The chief elements of its composition are beautiful forms in themselves and its mere size ensures that such features, if kept in reasonable relation to each other, will produce an impressive result. Foster succeeded in preserving their ratio admirably. The defects of his conception, its lack of vitality, its dulness, its formality, are more obvious, and therefore reference is more commonly made to them, emphasis laid on them when the building is under discussion. But another site and different material and its reputation would be world-wide.

It is no more than the truth to say that Foster put into its design all he knew, giving up his whole time and thought to its execution. His position of City Architect he resigned on the passing of the Municipal Reform Act in 1832 and was then more free to supervise the progress of the work. After its completion he lived only nine years. During those years he had retired more and more into private life, and on his death, at his own residence, Hamilton Square, Birkenhead, on August 21st, 1846, nothing more than the formal announcement of the fact occurred in the obituary columns of the Liverpool papers.

Foster and Cockerell.

Comparing in broad terms Cockerell and Foster's art, an essay which the circumstance of their connection in archaeological work naturally provokes, one may say that the former's genius was stimulated by all it absorbed in Greece, whilst the latter's was of too slender a quality to be more than purified. Cockerell bore his burden of knowledge with supreme facility; the more he learnt the more he increased his mastery over what he had acquired. He had become inspired with the spirit of classic architecture. His fecundity, his originality, his matchless faculty for the adaptation and development of motives, the wealth of his resource, and the vigour and delicacy of his conception stamp him as a master of style, an artist whose mind worked with boldness and precision.

With Foster such qualities are conspicuously absent. His point of view is conventional; his products are correct, not audacious. For him precedent and archaeological accuracy are of first importance. Not that his work lacks breadth and so of cold distinction, but it is deficient in vitality; it seems bloodless. Conventional motives, flat uniform surfaces (none of those subtle contrasts in texture in which Cockerell delighted), a poverty in the treatment of minor forms, and an aversion to almost all enrichment are his constant characteristics. In detail he was satisfied to reproduce, with meticulous accuracy, the examples he himself had assisted to discover, and, for the rest, made little innovation in the stock forms and balder conventions of the Greek Revival. His entablatures and capitals, bases, architraves, and archivolts, bands, and brackets are a standard and quite simple types. His employment of decoration is sparing to a degree, though it rarely betrays defective judgment; if it lacks especial interest it is neither vulgar nor inappropriate, for he was living in a tradition not yet sufficiently dissipated to be without influence in guiding his selection within safe limits. An instinct for sound proportion, a sense of scale, and some breadth in the handling of masses, he undoubtedly possessed and cultivated, and these constitute his real claim to a reputation he enjoyed chiefly on other grounds.

SANATORIA FOR CHESHIRE.

The Cheshire County Council has passed the following resolutions: "That a sanatorium or sanatoria should be provided for the county of Chester in combination with the boroughs of Birkenhead, Chester, Stockport (including Lancashire portion), Wallasey, and the Borough of Stoke-on-Trent, and that the County Medical Officer of Health should be requested, in consultation with the Medical Officers of Health of the boroughs named, to frame a joint scheme, and submit it for consideration at a future conference. That the County Medical Officer of Health should also be requested to prepare, after consultation with the Medical Officers of Health of the boroughs named, a scheme for the utilisation of existing infectious hospitals or sanatoria. That tuberculosis dispensaries should be established in each of the boroughs of Birkenhead, Chester, Stockport, Wallasey, and Stoke-on-Trent." It has been recommended for further consideration that Delamere Forest would be a favourable locality for the proposed sanatorium, which would provide 250 beds and would cost about £37,500.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

The New Australian Federal City.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The remarks of "Onlooker" in your issue of July 31st come as a pleasant surprise to me personally, as some of the points mentioned by him were taken into consideration in the scheme submitted in the competition by Mr. C. H. J. Clayton, A.M.I.C.E., and myself, as will be seen from the accompanying photograph of our plan.

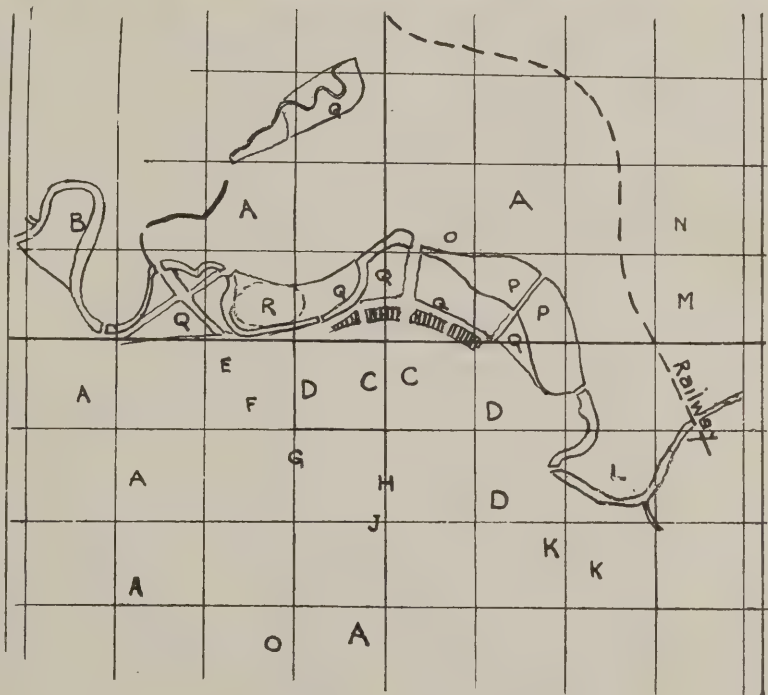
"Onlooker" remarks that "one would have thought that the river would have been kept open and the alluvial ground skirting it made into open spaces, etc., providing a broad air duct through the centre of the city."

In our remarks accompanying the plan we submitted occur these words: "To form this area (speaking of that about the river) into a chain of parks and a lake, thus providing an unimpeded airway through, and across, the lowest lying portion of the city site."

With regard to the successful competitors' disregard of contours, our street planning was based entirely upon these, and the greatest inclination of any road worked out at 1 in 17 and that only for some 330 yards, the next greatest being 1 in 40 for some 400 yards.

Another point which the successful competitors apparently did not take much notice of was the fact that the sewage works were to be some six miles distant from the city and at 1,800 ft. level and that the sewage had to flow there by gravitation. This means that certain lands about the river, if built upon, could not be drained as required according to the "conditions," because some of it is only 1,805 ft. above sea level. Allowing 5 ft. below ground to the bottom of sewer gives the bottom of the drain or sewer at the same height above sea level as the sewage works six miles away—i.e., allows no fall to the main sewer.

In the same way there is a limit to the height at which water can be supplied



THE NEW AUSTRALIAN FEDERAL CITY:
SCHEME BY C. H. J. CLAYTON AND H. SLICER.

from the proposed mains and on the pre-miated plans houses in some instances are shown above this level.

With regard to the railway passing through the city, this cannot be considered at all happy, because railways, however they are treated, are not things of beauty. We removed this unsightly feature to the eastern boundary of the city and placed it in a cutting.

As the photo is small, I have supplied a key-plan, the lettering of which will enable the positions of some of the features to be more clearly seen.

Reference letters on key-plan: A—Residential quarters. B—University Site. C—Municipal Buildings, Theatres, etc. D—Business Quarters. E—Technical

College. F—Governor-General's Residence. G—Cathedral. H—Houses of Parliament. J—Government Offices. K—Industrial Portion. L—Railway Marshalling Yards. M—Military Barracks. N—Site for Gaol. O—Hospitals. P—Lake. Q—Parks. R—Stadium.

H. SLICER, M.S.A.

The Architectural Association Exhibition.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—May I be spared a small space to correct a possible misapprehension in connection with your account in your issue of July 31st of the Architectural Association's Exhibition of Old and Present

Students' Works? Your criticism on p. 112 appears to read that Mr. P. E. Webb was the author of the Soane Medallion drawings, "Monumental Entrance to a City." Would you kindly make it clear that the complete set of drawings, including studies for same, were my work?

S. DOUGLAS ROBINSON.

Lighting and Ventilation of Schools.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In the issue of THE ARCHITECTS' AND BUILDERS' JOURNAL for July 31st, page 122, Mr. Edwin Smith states that "On a sunless day, in an average modern, well-lit classroom, the amount of light falling on a desk 10 ft. away from a window wall is about 3.33 per cent. of the amount that would fall on the desk in the open."

It would be interesting to know under what conditions Mr. Smith has obtained such extraordinarily high results. One generally finds that to obtain at 10 ft. from a window wall an illumination of $\frac{1}{1000}$ of the outside light requires highly favourable conditions—high window heads, clear and clean glass, light walls and ceilings, and a free horizon. I should be strongly inclined to doubt whether any practical conditions could be devised for schools whereby $\frac{1}{1000}$ of the outside light could be secured at 10 ft. from a lateral light, although such result could easily be obtained by means of a top lantern light.

To those who have not studied the subject and measured different conditions by accurate photometric methods it might seem strange that an ordinary interior, sufficiently light to enable one to read easily at sunset on a clear day should be enjoying only, say, $\frac{1}{1000}$ of the outside illumination; but any amateur photographer knows that at times when an exposure of, say, one-fifth of a second would suffice outside, quite five minutes would be required to take an ordinary interior with the same stop, a difference of 1500 to 1. This is only a rough test, but obviously an interior in which, under the same conditions, one could obtain the same results at 10 ft. from the window wall by an exposure of $\frac{1}{12}$ minutes would be unusually good; whereas to light a room from a window wall so that only six seconds would be sufficient is, I think, with all deference to Mr. Smith, a problem which school architects would find impossible with the funds at their disposal.

The question of school lighting, natural and artificial, is now being considered by a Research Committee of the Society of Illuminating Engineers, and I have no doubt that their investigations will establish the enormous superiority of top lighting over any possible form of lateral windows.

For some time I have been at pains to discover why top lights are taboo under the Regulations of the Board of Education. It is difficult to see what possible advantages can outweigh the advantages of properly constructed lanterns where such are possible, and I venture to suggest that the opinions of your readers might with advantage be solicited on the point.

PERCY J. WALDRAM.

London, W.C.

ARCHITECTURAL OPINION ON "THE TRANSFORMATION OF LONDON."

Truly the architectural interest of London is inexhaustible, and it is therefore the subject of unending discussion and criticism. What almost amounts to a controversy has arisen in the "Observer," which has discovered that "a wonderful, and in many respects a deplorable, transformation is taking place in the architecture of London, and that the character of many of the most famous thoroughfares in the world is changing before our eyes."

All this transformation is proceeding without architectural control, and a representative of our contemporary has been therefore moved to take counsel in this weighty matter with Messrs. Richardson and Gill.

"The tone of modern London," they are reported to have pointed out, "should be academic. We should go back to the school of Professor Cockerell, and carry on its academic traditions. Architects themselves should be academic and scholarly, and unless an architect is a scholar he should not be allowed to practise."

"Real English classic work of the eighteenth and nineteenth centuries is the finest in the world. Strange to say, however, it is to-day almost ignored by English architects. They prefer to follow the latest foreign styles, and neglect the fine work in their own country."

"Americans come over here to study our best buildings, and they reproduce them. What is the result? They do better work than we do."

"Contrast the modern transformation of London with that fine intellectual street, Pall Mall. There is not a false note in the whole of that street. Look, too, at districts like Regent's Park, with its rows of palaces. They compare favourably with the best residential districts in Paris, Berlin, and Brussels."

"Again, take such buildings as the Bank of England and the Royal Exchange, really the London Forum. You may take foreigners to see such buildings as these. You may take them also to see St. Pancras Railway Station and the Houses of Parliament. But you cannot take them to see the architecture of"—certain other streets that it would be perhaps invidious to particularise. Messrs. Richardson and Gill do not like our new General Post Office; and, they are reported as having said, "Going from east to west, look at Regent Street. The Crown authorities ought never to have allowed the Piccadilly Hotel to intrude upon the graceful curve of the Quadrant. We need there, as elsewhere, a jury of the Fine Arts to regulate the height and character of the new buildings that are rising. They should not be more than 60 ft. high at the most to the main cornice, and they should be treated in a broad manner as a brilliant background to the street, the lesson being taken from the style adopted by Nash."

"In Oxford Circus the height of the new buildings has been increased out of all proportion to the surroundings; and in the upper part of Regent Street the new Polytechnic is also out of scale with the street."

The critics then fall foul of other buildings, and finally invite a comparison with the buildings "in the Rue de Rivoli or the Champs Elysées in Paris, or with those in Unter den Linden in Berlin," where they say, it will be seen "what a splendid opportunity has been missed, owing to the fact that a jury of representatives of the Fine Arts has not been appointed to control the work."

"In modern London any architect is allowed to do what he likes, and he very seldom pays his neighbour the compliment of building harmoniously. A hundred years ago, when Nash's grand transformation of Regent Street took place, things were very different. Nash combined many buildings into one uniform façade."

Mr. S. D. Adshead, Professor of Town Planning at the University of Liverpool, similarly interviewed, is reported as having expressed his agreement with much of the criticism attributed to Messrs. Richardson and Gill.

"It is perfectly true," he is reported as having said to the "Observer" interviewer, "that London to-day is being rebuilt with a rapidity and on a scale that are unprecedented. This is largely due to the fact that at the present time the ninety-nine years' leases of properties erected at the commencement of the last century are falling in."

"Enormous extensions took place in the West End of London at the beginning of the nineteenth century, including practically the whole of the district lying between Oxford Street and Marylebone, a large part of Belgravia, and much of Mayfair, whilst Regent Street was just about to be planned by Nash."

"The plans for these buildings had practically in all cases to be approved by the estate architects. They were men of culture and academic to the last degree, and this usually meant that they themselves prepared the designs, with the result that was seen in such fine harmonious schemes as Bedford Square, Fitzroy Square, Russell Square, and Regent Street."

"But what are the conditions to-day?" Without desiring to call attention to any particular case, he thought it must be said that estate architecture generally was more strongly influenced by consideration of the immediate returns to be obtained from the properties than in any complete and permanent scheme of reconstruction. "The result is that leases are granted for the re-erection of buildings regardless of surroundings, regardless of height, regardless of colour, and regardless of architectural beauty."

With regard the much-discussed position of Kingsway, Professor Adshead is reported as saying:

"Although the intentions of the Council were of the best for providing Kingsway with fine architectural façades, their action was indecisive and marked with timidity at every stage. Their intention, which ought most certainly to have been enforced, that the whole street should be controlled by one architect was departed from. But perhaps the worst feature in the financial arrangements in connection with the letting of the sites has been the want of elasticity in the rental. Arrangements should have been made for the rentals to depend entirely upon the proportion of the sites occupied. Had any such arrangement been made there is no doubt that all the sites would have been taken up and occupied many years ago."

"With regard to the transformation of London generally, it is unfortunate that it is happening at a time when, as architects, we are the worst educated of any country in Europe. This is true, at any rate, of the present-day practitioner, although it hardly applies to the student, who in education is making enormous strides. . . . In America during the last decade the education of an American architect was considered provincial and inadequate unless he complemented his studies by four years' training in the Beaux-Arts at Paris, to be followed by a tour in Italy and Greece."

(Continued on page 173.)

The Health Committee of Glasgow Corporation are contemplating the erection of a hospital, estimated to cost about £60,000, at Robroyston.



FIREPLACE IN WALNUT BEDROOM, 11, HILL STREET, LONDON, W.

J. LEONARD WILLIAMS, F.R.I.B.A., ARCHITECT.

"Almost every architect of importance in America to-day has had this valuable experience, whereas the English practitioners who have had similar training in the finer aspects of architecture, as in art, may be numbered on the fingers of one hand. To my mind, the future of architecture in this country depends almost entirely upon improvement in our education."

Mr. F. Milton Tozer, in a letter to the editor of the "Observer," takes an optimistic view of the situation.

"I am amazed," he writes, "and more than amazed, to find the splendid buildings of recent years treated with such scant respect, and even classed with the dull and pedantic survivals of the Georgian era, and judged as altogether inferior. Messrs. Richardson and Gill would have us believe that the trend of architectural art is on the decline."

"No! the truth is diametrically opposite; a resident in, or a constant visitor to, London during the last ten or twenty years could not fail to have been impressed by the extraordinary improvements in the beauty of the buildings which have slowly and surely replaced the plastered and yellow-painted hideousness of the architecture of the Georgian era. We are now in the grip of a real and earnest enthusiasm in art matter headed by men of eminence, of learning, and of genius, not mere academic productions, but many of them risen from humble positions by artistic ability, which is the standard of the excellence of the modern architect."

"The attack is centred on the alteration of Regent Street. The original street in its entirety had great attractions, chiefly on account of its uniformity. But are we to imagine that these three-storey buildings are suited to modern requirements? Is it possible to compare the original buildings with the fine front of the Piccadilly Hotel, which is intended to be continued round the Quadrant? What a street is in the making! The other new buildings, including the Polytechnic and the new block in Oxford Circus, are all quite harmonious, and exemplify architectural art of a very high order. Take a walk down Oxford Street, there have risen, and are rising, some of the finest buildings London has ever known, which come very near to a true solution of modern building problems."

"It is observable that though the architecture of the last twenty years has been to a certain extent of an experimental nature, it has of late years been rapidly tending towards uniformity and a general tradition expressing excellently our ideas and our requirements."

"In the rise, development, and change of styles, there are certain easily noticeable characteristic changes which befall all styles. First, the old style gradually weakens and, as with the introduction of Renaissance architecture, which led on to Georgian, is supplanted by a widely differing ideal which takes to itself motifs from styles and periods analogous to its own. What English traditions did Wren follow? Yet there is no greater English architect. His was the expression of the ideal of the Renaissance which superseded that of Mediævalism. With his glorious example a new style received its impetus, which, although there were no other geniuses produced by it, yet evolved a dignified school of great uniformity, with no freedom in art, but a wise restraint, which, while not rising to the possibilities of the opportunities presented to it, did nothing particularly offensive and attained its best development in the days of Professor Cockerell. Since then the style degenerated into the hopeless and unambitious Victorian style,

and was still further confused and broken up by the Gothic Revival."

"London for a long time reflected in its buildings the conflict of the two styles, but gradually a new style arose, combining the best features of both, which was expressive of the modern ideal, which thinks not in terms of county or of race, but in terms of all humanity, which, therefore, is more abundant and full of promise. This ideal is now arriving at its better expression and the approach of a regular and noble style can be seen in the increasing uniformity of object and treatment among recent buildings."

"Believe me," he concludes, "there is no fear for London. The equipment of the English architect was never greater, his art was never truer, his enthusiasm was never so abundant and overflowing, his achievements never so great."

EXPERIMENTS IN SCHOOL CONSTRUCTION.

Mr. G. Topham Forrest, education architect to the Northumberland County Council, read an interesting paper at the York Congress of the Royal Sanitary Institute on "Experimental Schools: Three Northumberland Examples."

Mr. Forrest said that in many cases in colliery districts it was not possible, owing to expense and other reasons, to acquire support for the surface of the site, and therefore special precautions were necessary when designing the buildings. The new school at Choppington, Northumberland, opened about a month ago, was a very interesting example under this class.

"It is customary," he said, "for architects to lay a large raft of reinforced concrete over the whole building area. I am of opinion, however, that this is a wrong form of construction to adopt, and certainly in the case of this school such a treatment would not have materially assisted in minimising the risk of subsidence."

Some other means, therefore, had to be adopted, more economical and efficient. From observations and experimental tests carried out, he came to the conclusion that some system of reinforced brickwork would meet the case, as this mode of construction would render the walls monolithic and make the building infinitely stronger than if built with ordinary walls. Briefly, the system was to reinforce the mortar course with a wire mesh of best quality mild steel wire, galvanised, and having tensional wires running its entire length.

He applied this form of construction to the Choppington school, which was the first complete school of its kind in the country. It was with regard to the mixed department that the experiment had been tried. Here they had a school built in three sections completely independent of each other, with the foundations and walls reinforced, the foundations of reinforced concrete, and the walls of the superstructure reinforced with wire mesh of best quality mild steel wire, galvanised, and having tensional wires running its entire length.

The cost of the school worked out at £11 a school place, which was practically the cost of the better-class schools in Northumberland.

"The other two experimental buildings I intend referring to come under the head of the cheaper schools movement, and are both interesting examples," continued Mr. Forrest.

"The first example is the new school at Barrington Colliery, about sixteen miles from Newcastle. This school is con-

structed of wood on brick foundations, and works out at £6 10s. a school place."

The other experimental building was the new school erected in the village of Hartley, on the East Coast of Northumberland. The population consisted chiefly of miners employed at collieries outside the parish, and an application was made to the Board of Education for permission to erect a wood and iron building. The Board, however, were only prepared to recognise a wood and iron building for a limited period, pending the erection of a permanent building, and suggested that a more comfortable and satisfactory building than that proposed should be erected, which would at the same time be less expensive than a stone or brick building, and they invited him to discuss the matter with them.

"The school is designed to accommodate 300 scholars, and the price per head works out at £6 16s. 6d.," said Mr. Forrest, "but to this price must be added £525, being the cost of out-offices and boundary walling, which are of brick and stone, similar to a permanent building, and also the tar macadam playgrounds and drainage."

While not advocating the cheaper schools movement, Mr. Forrest said he believed there were many cases where it was highly desirable that education authorities should make careful inquiries as to the methods best adapted to meet the needs of their particular districts.

TARRED ROADS AND DUST PREVENTION.

According to a statement by Consul William H. Hunt, of St. Etienne, France, a report has been made to the French Academy of Science drawing attention to the detrimental effect on the eyes of the dust arising from tarred roads.

In an experiment made to determine the nature of this effect, mixtures were made up consisting of fine road dust and tar in varying proportions, and the eyes of rabbits were dusted with the mixtures. Results showed that while the pure road dust had little or no effect on the rabbits, their eyes were greatly affected by the presence of tar, and serious diseases broke out after the application, showing its noxious effect.

The report to the Academy states that tar produces good results only if the roads are well built and kept in good repair and are composed of sufficiently hard material, if the tar fully penetrates the crevices and does not form a merely external crust, which the first winter rains raise up and form into mud, and if the drying conditions during the dry season are satisfactory.

The use of superficial tarring is becoming more and more extended in the neighbourhood of Paris. In the St. Etienne district, and other parts of provincial France, progress has been slower except near a few large industrial centres.

In the department of Loire the tar is spread hot by hand or by spraying. Another method of application consists of rendering cold tar fluid by the addition of 10 per cent. crude oil and spreading it by the same means and the same manner as hot tar. In the department of Seine et Oise, recent experiments have been made with various tar and oil emulsions. Deliquescent salts were found to be of shorter duration, so that they can be applied only for special occasions, such as fêtes, races, etc. This department each year uses solutions of calcium chloride for watering certain sections of the roads which are not in sufficiently good condition to receive a coat of tar.

THE BUILDING OF THE ROYAL DANISH SOCIETY OF SCIENCE, COPENHAGEN.

Few institutions have been more lavishly endowed than the Danish Carlsberg Fund, founded by the eminent brewer, Dr. Jacobsen, and further endowed by his son, Mr. Carl Jacobsen, D.Ph., *hon. causa*, also an eminent brewer, the endowments in money and property probably amounting to about a million pounds. The revenue of this fund is applied to the advancement

of science and art, under the management of a distinguished board; and the building erected with the fund, was designed to form a worthy and dignified home for the Royal Danish Society of Science. The position leaves little to be desired, the building being entirely open on three sides, the front facing a large open space and having for its opposite neighbour the Glyptothek, which also owes its origin to the munificence of Dr. Jacobsen the younger.

The building has been designed by Mr. V. Petersen, titular Councillor of State,

and amongst his colleagues known by the name of "The Florentine." The outer walls, basement, and ground floor are granite, and the other storeys are a light sandstone; the columns on each side of the main entrance are polished granite. In the interior, marble of different colours has been used to a great extent, both on the grand staircase and in the halls, of which the largest is the lecturing hall proper, besides which there are a couple of smaller halls, offices, residence for a professor, &c. One of the halls is embellished by a huge picture by Kroyer, the famous Danish painter, representing a lecture in the Society of Science, and portraying a number of its distinguished members.

FEES AND PROFESSIONAL PRACTICE IN QUEBEC.

As a contribution to the perennially interesting question of architects' fees, the example of Quebec may not be altogether without value as presenting a few interesting points of comparison with professional practice at home.

As the outcome of recent representations to the Provincial Government, the Lieutenant-Governor-in-Council has approved of a new schedule of minimum fees for the Province of Quebec Association of Architects. The Association asked for a flat commission of five per cent., in place of five per cent. up to \$50,000, four per cent. from \$50,000 to \$150,000, and three per cent. over that amount. The following is the new list of commissions for services rendered by members of the Association:

No. 1.—The architect bases his professional charges upon the entire cost to the owner of the building, when completed, including all the fixtures necessary to render it fit for occupation, and is entitled to extra compensation for furniture and other articles designed or purchased by the architect.

No. 2.—If any of the material or work used in the construction of the building be already upon the ground, or come into the possession of the owner, the value of said material or work is to be added to the sum actually expended upon the building before the architect's commission is computed.

No. 3.—Travelling expenses are to be paid by the client.

No. 4.—The charge per day to be made by an architect shall depend on his professional standing, but the minimum charges shall be \$15 per day.

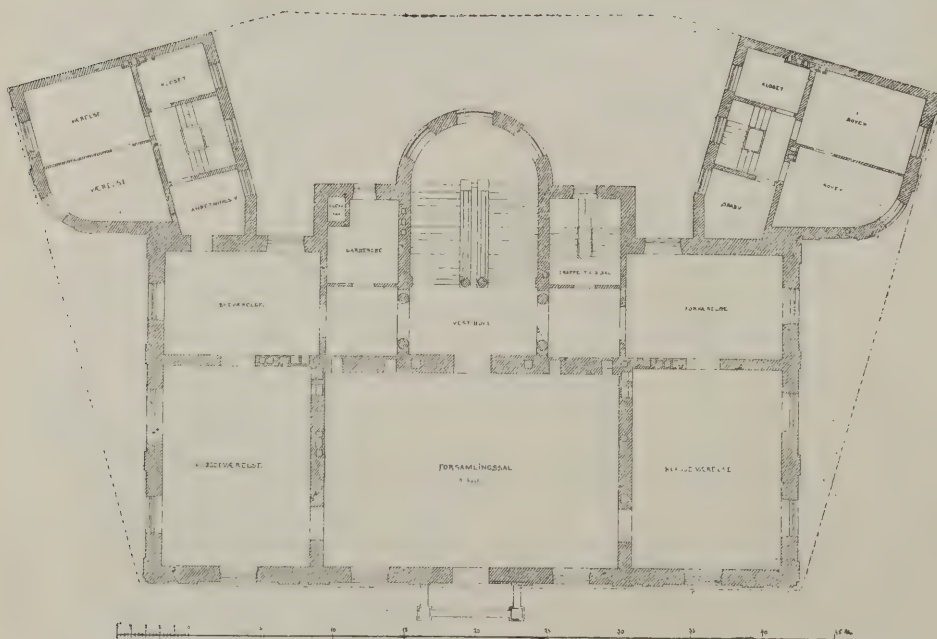
No. 5.—In all cases, where an architect is subpoenaed professionally as a witness in court, he shall be entitled to a fee of \$4 per day of attendance.

No. 6.—Drawings and specifications, instruments of service, are the property of the architect.

No. 7.—In consideration of the charges mentioned hereafter, the architect shall prepare drawings and specifications, originals, and provide copies of the drawings and specifications for the use of the contractors, but he shall be entitled to have all the originals and copies returned to him when the work shall be completed.

No. 8.—For professional services in connection with all buildings, comprising preliminary studies, complete plans, specifications, details, and superintendence, the architect shall be entitled except as hereinafter provided, to a commission of five per cent. on the total cost of the building when completed.

No. 9.—For all works of addition, alteration, or restoration, the architect



THE BUILDING OF THE ROYAL DANISH SOCIETY OF SCIENCE, COPENHAGEN.
V. PETERSEN, ARCHITECT.

shall be entitled to a commission of seven and one-half per cent. on the cost of the works.

No. 10.—For all other works of special character, viz.: For monumental work, fittings and furniture, and for decorative work, stained glass and such like, the architect shall be entitled to a commission of ten per cent. on the total cost of the work.

No. 11.—Partial charges, in the case of sub-division or discontinuation of the work, shall be as follows:

For preliminary studies (sketches), one-fifth of the above charges.

For complete plans and specifications,

including the preliminary studies, one-half of the above charges. For details, one-fifth of the above charges. For superintendence of the work, when drawings are not furnished, two and one-half per cent. on the cost of the works.

No. 12.—Where engineers or other experts are employed by the owner to co-operate with the architect for certain works (as for heating, ventilation, electric work, etc.), the architect shall receive for his commission two and one-half per cent. of the cost of such work.

No. 13.—For valuation of property requiring measurement and detail estimate, where the value shall not exceed \$5,000, the commission shall be one and one-half

per cent. Where the value exceeds \$5,000, the commission shall be one and one-half per cent. on the first \$5,000 and one per cent. on the remainder.

No. 14.—In case the owner of the building should require the services of the architect to prepare quantities, or for measurement of the work done or to be done, such service shall be paid (outside of the regular commission) at the rate of two per cent. on the valuation of the cost of the work.

No. 15.—Should the owner desire to have a clerk of the works in the building, the said clerk of work shall be engaged and be under the direction of the architect, and shall be paid by the owner.



THE BUILDING OF THE ROYAL DANISH SOCIETY OF SCIENCE, COPENHAGEN. GRAND STAIRCASE, FROM PRINCIPAL FLOOR. V. PETERSEN, ARCHITECT.

ENQUIRIES ANSWERED.

Cleaning Wall Papers.

S. B. (London, S.E.) writes: "Please name a satisfactory method of cleaning wall papers."

—Breadcrumb is the best material for this purpose. A quatern loaf two days' old should be cut in eight half quarters. After blowing off loose dust from the paper with bellows begin at the top of the room, wiping the paper lightly downwards in successive strokes about half a yard each, until this depth all round is cleaned; then go round again in similar fashion, beginning each successive course a little higher than the upper stroke had extended, and so on until the bottom is reached. Do not rub hard, or attempt cross or horizontal strokes; cut away the surface of the bread as it becomes compact or dirty.

G.

Cottage Sink Waste, etc.: Capacity of Pump.

L. W. writes: "(1) Kindly inform me how to deal with the sink waste and part surface water from four labourers' cottages in the country. (2) Please state, also, the method of finding the depth and distance drainable by an ordinary pump, when both dimensions have to be considered together."

—(1) Querist is not sufficiently specific to obtain a detailed reply. Presuming, however, that soil is dealt with separately—by earth closets or otherwise—the possible methods of dealing with sink wastes and surface water depend on the nature of the site and kind of land. The simplest method where no special facilities exist is to contain the roof water in butts, with an overflow drain from each to a sump or soakaway, and to allow each sink-waste to discharge into a bucket beneath, which is emptied on the garden ground as it fills. A simple system of distribution channels, changeable at need to prevent saturation, may also be devised in some cases. (2) A column of water 33.94 ft. high is in equilibrium with the atmosphere at sea level. Theoretically, this is the extreme lift of an ordinary suction pump, but with allowances for friction and waste it is safer to keep the working barrel within 20 ft. of the surface of the water. If the well is deeper than this a lift and force pump, with the barrel working in the well not more than 25 ft. above the bottom, will be required. The vertical height or lift is the important factor, horizontal distance being considered only as increasing the internal friction in the suction or delivery pipes.

G.

Instruction in Architecture and Surveying.

Correspondents write: "(1) We are articulated to an auctioneer, who has agreed to instruct us in architecture, surveying, valuation, and estate agency, etc., to the best of his ability. We should be pleased to know if there is any architects' or surveyors' society (except the Society of Architects and the Surveyors' Institution) with which membership is possible in view of the above circumstances. (2) If there is no such society, what examinations are there the passing of which would entitle one to a certificate, which would be useful when applying for a position in either of the professions at the expiration of our indentures."

—(1) The leading professional body for architects is the Royal Institute of British Architects, which all architects intending to practice should join. Pupils are entitled to enrolment as probationers upon submission of satisfactory drawings, and certi-

fications from various well-known educational examining bodies, or by direct examination in general knowledge. Full particulars are given in the current R.I.B.A. Kalendar, obtainable at the Institute, 9, Conduit Street, W., price 2s. 6d. Our correspondents are advised to supplement any architectural training they are likely to receive in an auctioneer's office by joining the course of one of the recognised teaching bodies. If in London, the course of the Architectural Association should be followed, while in every important provincial centre there are teaching facilities, all leading ultimately to the examinations of the R.I.B.A. Outline particulars of these various courses are also given in the R.I.B.A. Kalendar. The Surveyors' Institution is the recognised representative body for the surveying and allied professions. (2) The best recommendation in obtaining a position in an architect's or surveyor's office is membership by examination of either of the above-named societies respectively, or, in the case of architects, a leaving-certificate from one of the recognised architectural schools is increasingly useful. The Government examinations in building construction and allied subjects held in connection with local technical institutes are not much valued by professional men.

G.

The Stamford Gray Tile.

B.B.H. writes: "Please say where the Stamford gray tile is made, giving the names of manufacturers."

—The so-called Stamford gray tiles are more properly known as stone slates. They are quarried at Easton-on-the-Hill and Collyweston. Enquire of Mr. Brittain, T. Chappell, or Jas. Hill of Easton, or W. Goodwin, J. Knapp, or J. Mitchell of Collyweston, Northamptonshire, who will give particulars and prices. Stone slates are also supplied from Eyford Quarries, Bourton-on-the-Water, Gloucestershire (address Mr. H. Coverdale, Wigan, Lancs.), or, of course, the larger and heavier Yorkshire slabs can be obtained from many quarries in Yorkshire—Idle Stone Quarries, as an instance. If gray tiles similar to those used in Cambridgeshire and Norfolk are wanted, these can be obtained from almost any of the brick and tilemakers around Cambridge and Ely.

G.

ARCHITECTS' AND SURVEYORS'
"APPROVED SOCIETY" UNDER THE
NATIONAL INSURANCE ACT.

The Architectural Association, in conjunction with the Royal Institute of British Architects and the Surveyors' Institution, have had under consideration how best the interests of their members and those in their employ who come within the category of insured persons under the National Insurance Act may be promoted.

After consultation with insurance experts, they have come to the conclusion that the formation of a special "Approved Society" for architects' and surveyors' assistants and clerks would prove advantageous to those concerned, for two principal reasons, viz.: (1) That their average health, as a class, is good. (2) That the proportion of persons passing out of the category of insured persons is higher than in non-technical professions and businesses; and that as a consequence the funds available for benefits in addition to those provided by the Act would be larger than in societies with a miscellaneous membership.

Subject to sufficient numbers being obtained, it has been decided to found such an approved society.

As a membership of at least 5,000 is necessary in order to form a separate entity for insurance purposes, it is hoped that the support of architects may be relied upon in furthering an effort which should prove of benefit to those in the professions who come within the provisions of the Act. There is nothing to prevent persons who may have already enrolled themselves in a non-professional society from transferring their membership, and, for the reasons stated herein, there would seem to be definite advantages to be gained by their doing. All persons engaged in architectural and surveyors' offices and earning less than £160 per annum are eligible for membership.

The proposal is supported by the following members of the two professions: Sir Ernest Webb, C.V.O., C.B., R.A., Sir Ernest George, A.R.A., Sir Alexander Stenning, F.R.I.B.A., F.S.I., W. Edgar Horne, M.P., F.S.I., Leslie R. Viger, F.S.I., G. Corderoy, F.S.I., Professor Reginald Blomfield, A.R.A., F.S.A., President of the Royal Institute of British Architects; by the following vice-presidents of the Royal Institute of British Architects: A. W. S. Cross, M.A., F.R.I.B.A., George Hubbard, F.S.A., F.R.I.B.A., Ernest Newton, A.R.A., and E. G. Dawber, F.R.I.B.A.; the Hon. Edward Gerald Strutt, F.S.I., President of the Surveyors' Institution; by John Farrer, F.S.I., W. Edward Woolley, F.S.I., H. Chatfield Clarke, F.S.I., F.R.I.B.A., and Edward Blakeway P'Anson, F.S.I., F.R.I.B.A., vice-presidents of the Surveyors' Institution; by Gerald C. Horsley, F.R.I.B.A., president of the Architectural Association, and W. Curtis Green, F.R.I.B.A., and Maurice E. Webb, M.A., vice-presidents of the Architectural Association.

The circular in which this announcement is made is signed by F. R. Yerbury, secretary Architectural Association; Ian MacAlister, secretary Royal Institute of British Architects; and A. Goddard, secretary Surveyors' Institution.

All communications for the present are to be addressed to the Hon. Secretary, 1, Tufton Street, Westminster, S.W.

New London Garden Suburb.

The plan for the new co-partnership garden suburb trust extensions at Hampstead has now been completed. It covers an area of 412 acres in the Finchley district, which joins the present Hampstead Garden Suburb. The whole of the district will come within the new town plan which the Finchley District Council is going to submit to the Local Government Board for approval. On this new area 3,208 houses are to be erected, which will provide for a population of between 15,000 and 20,000. The average number of houses to the acre will thus be about eight, which is almost if not quite, unprecedented in town planning in this country. Sixty acres of the 412 are to be devoted to open spaces, wooded lands, and one of the recreation grounds alone will cover twenty acres. The plan provides for a market square in the eastern portion, where tenants may dispose of their garden produce, etc. The new suburb estate extends to a point adjacent to the East Finchley Station of the Great Northern Railway, thus affording easy access to the city. The plan has been completed by an amicable arrangement between the Co-partnership Tenants Board, the management of the Hampstead Garden Suburb Trust, and the Finchley Urban District Council.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

Educational Work. That very soon the educational sessions will reopen we are reminded by the arrival of the

extensive "Programme" in which the activities of the City and Guilds of London Institute Department of Technology are set forth. This "Programme" is a substantial volume of 374 pages, and it appears to deal with almost every industry that is followed in this country. The various building trades receive a fair share of attention, and iron and steel manufacture and structural engineering form two of the subjects in which examinations are held and prizes and certificates are awarded. As yet there is no special examination in reinforced-concrete work, that subject being included under structural engineering, in the final examination of which the student is expected to give evidence of "a general knowledge of the systems of ferro-concrete construction, as applied to buildings, arched bridges, tanks, piles, and conduits. Simple calculations of such structures, in so far as they may be calculated with any degree of accuracy. The beam theory as applied to ferro-concrete beams and floors. Strength of ferro-concrete piles. Materials and specifications for ferro-concrete."

This, being the thirteenth and last item of "Ferro" and "Reinforced." the syllabus for the final examination in structural engineering, would seem to have been added as a sort of afterthought, or as just an offhand nodding recognition of a newcomer whose presence could not be entirely ignored, but who, arriving somewhat late in the assembly, could only be offered a back seat, or perhaps standing room only. Perhaps the stewards knew very little of his antecedents, and were not quite sure of having caught his name correctly. We have very frequently pointed out that, as applied to the general subject, this should not be Ferro-concrete. That name has been closely identified with a special system, and its use as implying all systems might therefore give rise to misunderstanding. Moreover, the term is not wide enough to include all systems of reinforcement. It is for this reason that we have always preferred to speak of reinforced concrete, which seems to be sufficiently comprehensive to cover all contingencies—even the use of non-ferrous reinforcement. We would therefore recommend the Institute to substitute this wider term.

Efficient Instruction. We would also recommend them to give the subject wider scope—to treat it not as an appendage of structural engineering, but as an independent entity, or subject *per se*, in which they will find ample scope for instruction and examination. Whether they would be able at once to find a sufficient number of competent instructors in it is another matter. Here, we are afraid, they might meet with considerable difficulty. The man who has a thorough grasp of what is at present known about reinforced-concrete construction is, for the moment, distinctly at a premium. He can find more profitable employment in the direct

practical application of his knowledge than, in present circumstances, would be likely to accrue to him as a teacher of evening classes.

Experts in the Making. Given the right class of teacher, however, would it be safe to count on his getting, under the City and Guilds system, the right stamp of pupil? The fault of that system is that it fosters much ambition without doing much to satisfy it. No doubt the hope of promotion stimulates many a young craftsman to take the utmost advantage of the opportunities for self-improvement that the evening classes afford him; and the percentage of those who become fully qualified for promotion is probably smaller than those who get it. Generally speaking, however, the fact that a foreman—say, for example, a builder's foreman—falls somewhat short of a certain recognised standard of efficiency is seldom of vital consequence. The case is different with the expert in reinforced-concrete work. His mistakes might prove disastrous in the extreme. He should therefore be a rather special type of man, having in particular a strong bent for mathematics and a passion for accuracy in the application of that science. Not that the mathematical problems involved in reinforced-concrete calculations are at all formidable—to those who have the mathematical temperament. But an astonishing number of people—probably the vast majority—are entirely lacking in that respect, and youths who suffer from this natural disqualification should by no means be allowed to meddle with work in which mistakes may entail disaster. Is it, then, advisable to afford facilities for all and sundry to study a subject which demands special aptitude?

Elimination of the Unfit. It does not seem that there is very much danger in spreading knowledge of any kind. The processes of eliminating the unfit, which ensure us (to a reasonable extent) against incompetent doctors, civil engineers, engineers, sea-captains, builders, and others upon whose expertness lives continually depend, would be in operation among those who, aspiring, with or without natural justification, to become experts in reinforced-concrete design or construction, were afforded the requisite facilities for proving their fitness—or their unfitness—for that high calling. The reinforced-concrete expert, however, could only in very exceptional instances be the product of City and Guilds or other evening classes, for he must not be a smatterer. Such classes serve many useful purposes, not the least valuable of these being the frequent demonstration that a youth's ambition is a good deal ahead of his capacity. They fulfil, in fact, a very useful function in weeding out the unfit. At the same time they encourage the right men to acquire efficiency, and they evolve, perhaps as their staple product, a more intelligent stamp of workman, and a more rational type of foreman, better able to follow instructions, and, his measure having been taken and recorded in the examinations,

less liable to go beyond his limitations than the man who remains unaware of his own shortcomings.

The Supply of Experts. Evening classes, and similar more or less fortuitous means of atoning for the deplorable deficiencies in the educational machinery of this country, cannot be expected to furnish any regular supply of recruits to the small and select band of reinforced-concrete experts. These are necessarily men of uncommon natural ability, who have usually come through a severe course of technical training, which they have been able to apply or adapt successfully to the requirements of reinforced-concrete design. They have come to the front by sheer force of character and ability. The adequate supply of such men cannot be guaranteed. As the work steadily increases in volume, the men able to do it will become proportionately scarce unless some means of special training can be organised. In this direction a beginning has been made by the Concrete Institute, which, itself in a sense an educational body on "mutual improvement" lines, collecting, discussing, and disseminating information, evidently realises the need for the systematic training of the experts of the immediate future, and to this end has determined to admit student members, and has thus initiated what in time may develop into an important educational movement.

The Mathematical Temperament. With regard to what we have ventured to call the mathematical temperament, it seems rather probable that many people may possess it without becoming aware of the fact. Inefficient teaching in the primary and secondary schools is responsible for much of the distaste for mathematics which is so widely prevalent; and a misused faculty is liable to degeneracy. In this respect it would appear that America is no better off than this country; otherwise it would not have been thought necessary by our contemporary "The Engineering Record" to devote a leading article to "The Teaching of Mathematics," in which stress is laid on "the imperfect mathematical instruction usually given in secondary schools," where, it is declared, the pupil is rarely taught, but undergoes a process of mental cramming, with the inevitable mental indigestion. The teaching of mathematics in schools lends itself with peculiar intensity to the temptation to give to him that hath, and to take from him that hath nothing even that which he hath. In other words, the bright boy gets all the teaching, and the dullard is slighted; or, worse still, he is badgered and taunted until he hates the subject, and any spark of it that is within him is extinguished instead of being coaxed to potentiality. At rather long intervals a De Morgan, a Clifford, or a Perry initiates reform; but, so far as the schools are concerned, the only result seems to be that their last state is worse than their first, and far too large a percentage of boys leave school with Oliver Goldsmith's disgust for "the low cunning of algebra." Hence it is that so many

architects, observing that reinforced-concrete design is beset with mathematical formulæ and other manifestations of careful calculation and close reasoning, give it a wide berth. In many cases their prudence is commendable; yet there are many instances in which an exaggerated notion of the difficulties has scared off those who, having a fairly respectable talent for mathematics, would find that, after all, reinforced concrete design would really make no very great demands upon it. But while, to a mathematical mind, the operations involved may seem quite simple, they present insuperable difficulties to the non-mathematical temperament. In this respect, as in some others, the reinforced-concrete expert deserves this distinctive term; and, on the whole, we are inclined to insist rather strongly on the necessity for marked talent and taste in mathematics in the designer of reinforced concrete. Those who have not this decided bent had better not meddle with matters that may prove to be too high for them, and may prove it most disastrously; for, as Mr. William Dunn has observed in his admirable "Lectures on Reinforced Concrete," errors in calculation are likely causes of failure. "In reinforced concrete," he very justly adds, "the calculations are so complicated that it is most desirable, in all but the simplest cases, to have a second and independent calculation of all the parts. With the utmost care and skill we are liable to errors in our reckoning, and I would strongly urge upon you the necessity for an independent check on your work." That should be a sufficiently broad hint to the mathematically disinclined.

WATER-SOFTENING TANK,
OPENSHAW, MANCHESTER.

The water-softening tank shown in the accompanying illustrations has been erected at the works of Messrs. Armstrong Whitworth, at Openshaw, Manchester. It has a total capacity of 200,000 gallons. The centre cylinder is 15 ft. in diameter inside, and when in use contains a depth of water of 70 ft. This in itself is a matter of interest, for, so far as we are aware, there are no other tanks in the United Kingdom built of reinforced concrete which have to resist a head of water equal to this depth. The wall of the cylinder is 8 in. thick at

the bottom, decreasing in thickness to 4 in. at the top, and the reinforcement is varied to resist the bursting pressure at the various depths. The centre cylinder rests upon an octagonal reinforced concrete foundation carried 20 ft. below the ground level. At the top of the cylinder another tank spreads out to a total width of about 60 ft., acting as a storage tank for the softened water.

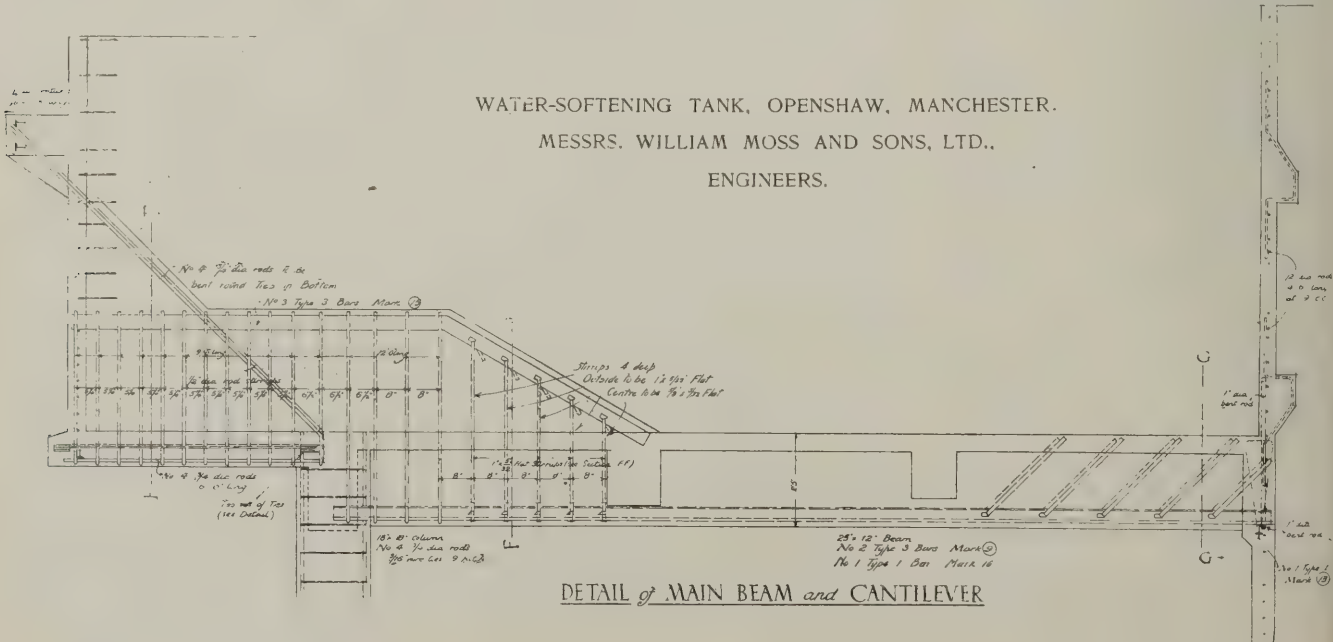
The working of the tank is as follows: The water is pumped from a well close to the foundations into a mixing chamber at the top of the cylinder, which is not shown on the drawings. In this chamber the water is mixed with lime; afterwards being taken down by a 12-in. central pipe to the

bottom of the cylinder. As will be seen by the drawings, the bottom of the cylinder is conical, so as to gather the precipitated lime deposited by the water coming down the central pipe, and by means of special cocks at the bottom of the cone this lime can be periodically removed. After emerging from the pipe, the water rises slowly up the cylinder for the whole of the 70 ft., and any particles of lime still in suspension in the water gradually sink to the bottom of the cylinder as the water rises.

When the water reaches the top of the cylinder it passes through a wood-wool filter bed and emerges through the top of that filter, overflowing into the wide umbrella-shaped storage tank previously

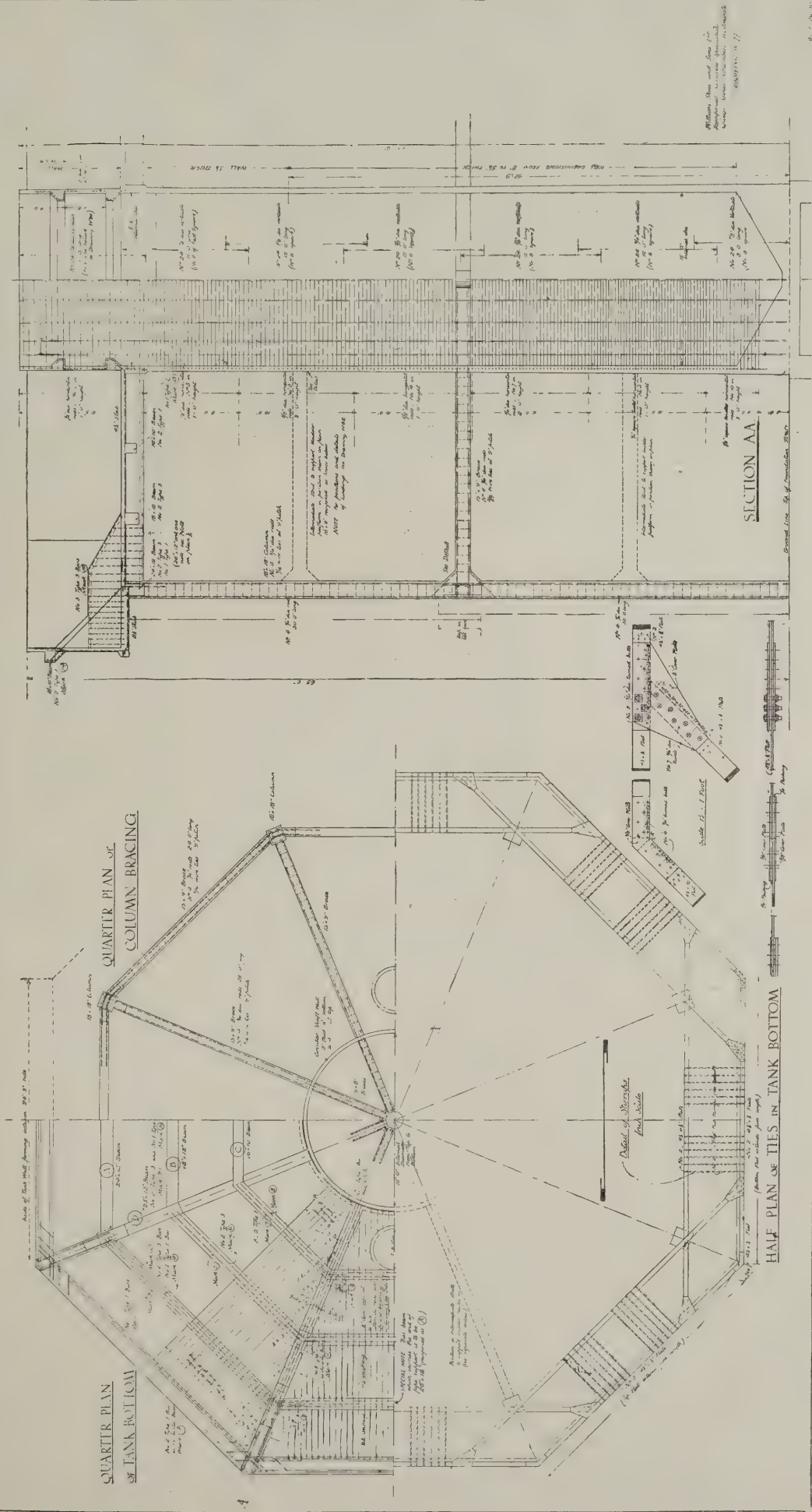


WATER-SOFTENING TANK, OPENSHAW, MANCHESTER.



WATER-SOFTENING TANK, OPENSHAW, MANCHESTER.
MESSRS. WILLIAM MOSS AND SONS, LTD.,
ENGINEERS.

WATER SOFTENING TANK FOR MESSRS ARMSTRONG WHITWORTH AND COY LTD MANCHESTER



WATER-SOFTENING TANK, OPENSHAW, MANCHESTER: DETAILS OF CONSTRUCTION. MESSRS. WILLIAM MOSS AND SONS, LTD., ENGINEERS.

mentioned. From the description given it will be seen that the water and lime have to flow downwards through the central pipe and afterwards up in the cylinder itself, thus giving ample opportunity for all particles of lime to be eliminated before the water is finally filtered and let into the storage tank. Notwithstanding the great pressure to which the tank is subjected, the only waterproofing considered necessary was accomplished by means of rendering, and although the tank has been in use for some time this has proved quite satisfactory.

The water-softening plant was supplied by Messrs. Lassen and Hjort, of 52, Queen Victoria Street, who are well known in connection with this class of work. This particular plant has a capacity of 20,000 gallons per hour, and it is practically automatic, the measurement and admixture of water and chemicals in the correctly proportioned quantities being accomplished without the attendance of a man. The amount of labour required to keep this large plant in order does not extend beyond the replenishing of the chemical supply at stated intervals, and the necessary attention to the sludge cocks by which the precipitated impurities of the water are removed. The effect of the softening operation is in rendering the water absolutely soft and clear and incapable of causing either scale or corrosion in the boilers.

The reinforced concrete work was carried out by Messrs. William Moss and Sons, Ltd., of Queen Anne's Chambers, Westminster, from the design of their engineering staff under the superintendence of their chief engineer, Mr. H. de Colleville, A.R.I.B.A.

CONCRETE PAVEMENT FOR ROADWAYS.

Concrete pavement is to be used for the first time in the history of the city of Cleveland on one of the park roadways along the Lake Erie water front. The Municipal Department of Public Service intend to lay about one mile of concrete pavement as an experiment. Its action under traffic will be carefully observed, and if it proves satisfactory it is probable that a number of the city's park roads and boulevards will be paved in this manner. The road upon which the pavement is to be laid is in Gordon Park and for the greater part of its length will be on a flat grade. At the easterly end of the park, however, the grade steepens to a maximum of 5 per cent.

The work will involve about 16,600 sq. yd. of concrete pavement and 10,200 lin. ft. of concrete curb; the total cost of the pavement and curbing will be approximately 22,000 dols. The principal features of the new construction, as outlined in the specifications, are given in the following paragraphs.

The sub-grade is to be brought to the shape of the finished roadway and compacted either with a 10-ton roller or by the use of 50-lb. hand tampers. Upon the roadway thus formed there will be laid a concrete base $5\frac{1}{2}$ in. thick at the crown and $3\frac{1}{2}$ in. at the gutters, mixed in the proportions of 1 part Portland cement, $2\frac{1}{2}$ parts sand, and 5 parts broken stone, slag, or gravel. The material is to be mixed in a batch mixer and the consistency is to be wet enough to produce concrete that will flush readily under slight tamping but which may be handled without causing a separation of the coarse aggregate from the mortar. It is important that the concrete be made not so wet that it will creep toward the curb or sag out of place when it has been deposited and tamped lightly.

The concrete is to be placed in strips extending the full length of the roadway and spread evenly and lightly tamped until free water appears on the surface.

The wearing surface is to be $1\frac{1}{2}$ in. thick consisting of one part Portland cement and two parts sand. The wearing surface is to be coloured by the use of lamp black mixed with the cement in the ratio of 1 lb. of lamp black to 1 barrel of cement.

The specifications lay stress upon the fact that the wearing surface must be deposited not more than 30 min. after the concrete for the base is placed. Before the wearing surface sets it is to be finished off to a smooth surface with a wooden float and roughened by brushing with a stiff vegetable fibre broom, the sweeping being done in a direction at right angles to the line of the road.

Expansion joints $\frac{1}{2}$ in. in width are to be formed longitudinally along either curb and at 25-ft. intervals there are to be $\frac{1}{2}$ -in. transverse expansion joints. The filler for all of these joints is to be a bituminous composition poured at a temperature of about 400 degrees Fahr.

The pavement work is being done by the Division of Engineering of the Department of Public Service.

THE DESIGN OF REINFORCED CONCRETE BRIDGES.

Certain of the methods employed in the design of reinforced concrete bridges for the city of Pittsburg, Pa., are discussed by Mr. J. R. Ferguson, designing engineer, in a paper recently presented before the Engineers' Society of Western Pennsylvania. Mr. Ferguson states in part that: Although one of the classic assumptions of theorists, when discussing the mechanics of reinforced concrete beams, is that the two materials deform together; conclusive experiments have shown the lack of complete homogeneous action, and hence the futility of attempting to analyse all stresses arising in such beams, by methods dependent upon that assumption.

In view of that condition, the purpose of web reinforcement is not, in his opinion, necessarily to prevent failure in diagonal tension any more than the purpose of the longitudinal reinforcement is to prevent failure in tension at the bottom of the beam. This is incidental to its main function, which is to carry certain definite tensional stresses developed within the beam as working loads with the same factor of safety as reinforcement for any other purpose.

The theoretical treatment of the problem of designing web reinforcement is a difficult one, chiefly because reinforced concrete beams are scarcely amenable to the principles of stress which are applicable to beams of homogeneous construction. This condition is true for those portions of a reinforced concrete beam where the horizontal reinforcement is stressed in tension beyond the maximum value of 6,000 lb. per square inch. Where the stress is below the above amounts the computation may be made with the formulas given in the books, and derived from the conditions of the homogeneous beam, for the continuity of the web is not destroyed and the web is in a condition to carry the stresses. Web stresses are intimately connected with bond stresses between the concrete, and reinforcement and the bond stresses vary from point to point. The law of variation of each stress along the beam is similar and web and bond stresses are interdependent in their relations.

Experiments made on beams reinforced with plain bars by Dr. Preuss of the Technical College of Darmstadt show that a distinctly noticeable slip of the reinforcement occurs with relatively small loads and that, indeed, before cracks could be recognised. Conspicuous movement occurred when the bond reached the value of 80 lb. per square inch of the surface area of the bars. The experiments indicated that the movement increases rapidly as the cracks develop. If then a relative displacement between the reinforcement and concrete takes place with small loadings, where plain round or square bars are used, in Mr. Ferguson's opinion, it is clear that the use of deformed bars will bring about a more definite and satisfactory distribution of stresses. This condition has led to the use of deformed bars in the design of bridges for the city of Pittsburgh, for the loads that come upon the beams are concentrated, and concentrated loads cause considerable localisation of the stresses.

In designing beams with such loads as come upon city bridges for the loose bar method, Mr. Ferguson states that, in his experience, if plain bars are used, the surface area required to carry the bonding stresses at 80 lb. per square inch, as recommended by the Joint Committee, will be so great that no bars at all could be turned up to carry the diagonal stresses. If deformed bars are used and a value of 150 lb. per square inch be assumed for the bonding strength a sufficient number of bars may be turned up to carry the web stresses between the point where the horizontal reinforcement has reached a stress of 6,000 lb. per square inch and the support for the beam. Between this point and the centre of the span all concentrated loads must be cared for in some other way.

In designing with rigidly attached diagonal web members the above condition occurs between the point where the tension has reached 6,000 lb. per square inch and the support. Between this point and the centre of the span all considerable increments in the stress of the reinforcement may be taken into the web by the rigidly attached web members. This stress should be resolved in the direction of the web members in calculating the area required to carry the stresses. Where the localised bond stress is thus carried directly into the web the bonding stresses will be carried as tensional stress by the web members and will not become distributed along the horizontal reinforcement. In this case the horizontal reinforcement may be made from plain or smooth bars and may be stopped off where not required. As to actual shear, unaccompanied by tension, to carry the tensional stresses, beams correctly designed for the tensional web stresses will not be overstressed if the depth of beam approximates the economical depth.

Besides the specification for methods of reinforcing having rigidly attached web members a specification is written covering the use of deformed bars in the loose bar method which is here quoted.

"Any deformed bar may be used having deformations, lugs, or corrugations which present a positive shoulder to the concrete having an angle of not less than 45 deg. with the axis of the bar. Bars having deformations with sharp corners or deep corrugations apt to form air pockets or deformations having a wedging action tending to split the concrete will not be accepted. The net cross-section of such bars shall be the least possible section whether taken at right angles to the axis of the bar or not."

GRAPHICAL CALCULATION OF CONCRETE REINFORCEMENT.

The constant repetition of similar calculations is very wearisome. The tendency is to produce a species of mental numbness which results in a plentiful crop of annoying and expensive inaccuracies. The figuring of the proportions of reinforced concrete beams and slabs falls within this category. It is practically impossible to make a list of all the various combinations of beam depth and width, steel ratio, concrete mix, etc., and the lists which are sometimes used show such big gaps that the "nearest" figures are often lamentably far from the ideal proportions for the structure.

It is well to be on the safe side, but when all proper precautions have been taken, any excess of material is just an added stress on the structure, and a consequent weakness in the design, to say nothing of the useless expenditure involved.

The only method which will obviate the necessity for repeated figuring and, at the same time, supply for immediate reference all the ordinary combinations of the variables, is the Graphical Method. The plotting of graphs is no new process, and it is surprising that so few engineers avail themselves of the convenience and accuracy which characterises its use.

The writer, Mr. Malcolm R. Meldrum, in the "Contract Record" of Toronto, has prepared for his own practice a series of diagrams covering all the ordinary calculations in concrete reinforcement, of which the accompanying illustrations will serve as examples. The figuring of bending moment on a slab would appear to be absolutely simple, but it consists of four different operations, and, therefore, permits the possibility of four separate errors.

Fig. 1, which represents the formula $M = WL/10$ in diagrammatic form, enables one to read off the result with a minimum of effort and a maximum of accuracy and speed.

Fig. 2 develops the plan to an even more useful degree. Here is shown the progressive increase in strength of a 6-in. concrete slab by the insertion of varying quantities, or "areas" of reinforcing steel. Up to a certain point the increase in strength is practically proportionate to the extra amount of steel, but beyond this point the concrete itself is the determining factor. This "critical point," which depends, of course, on the unit strength of the concrete, is very clearly indicated on the diagram for three ordinarily assumed values of f_c : Intermediate values can be very readily and accurately located by dividers, or merely by the eye.

As this "critical point" represents the most economical combination of steel and concrete—the point where both materials are stressed to their maximum safe stress—exact determination is obviously a matter of prime importance.

For the sake of those readers unfamiliar with graphs, we might here give an illustration of the use of these two diagrams. A reinforced-concrete floor is to carry an added load of one hundred and twenty-five pounds per square foot, giving a total load of two hundred pounds per square foot. In Fig. 1 follow the horizontal line from 200 to the sloping line marked 10 ft. span. From the point of intersection follow the vertical line downwards to the line of bending moments, and read off 2,000-ft. pounds.

The internal moment of resistance must equal the external bending moment, for equilibrium. Turning to Fig. 2, find the moment of resistance on the base line,

follow the vertical line thence to its intersection with the "steel" line. Notice now the position of the "concrete" lines. Assuming that the safe compressive value of concrete at the outermost fibre is to be taken at 600 per square inch, follow up the vertical until it cuts the 600 line. Then run across horizontally to the left side of the diagram and note the "steel area"—.35 square inches per foot width of slab.

Similar graphs have been prepared for rectangular beams and for I-Beams, and they are capable of saving an enormous amount of time. We hear much of "motion study" in machine shops and factories, but mental operations are even more expensive than the manual ones, and an effort to obtain economical and efficient results in figuring will sometimes achieve surprising success.

[We have frequently advocated the judicious use of such graphic methods as Mr. Meldrum suggests. Their utility, within certain limits, is unquestionable. At the same time, we have always felt it necessary to add the caution that their safest service is the help they afford in checking calculations.]

LATERAL PRESSURE OF LIQUID CONCRETE.

Mr. H. St. G. Robinson has contributed to the "Proceedings" of the Institution of Civil Engineers some notes on a series of experiments to ascertain the direct lateral pressure of liquid concrete. The first experiments were conducted about five years ago, during the construction of a heavy retaining wall, by placing boards between the uprights of the vertical forms and noting the deflections caused by the various heads of concrete.

These experiments, however, were thought to be somewhat unreliable, owing to want of refinement, and Mr. Robinson has since carried out further experiments of a similar nature, but with an apparatus constructed to secure more accurate results. This consists of a strong cast-iron chamber, fitted with a sheet-rubber working face, and is arranged so as to be readily fixed in position on the forms. The chamber is filled with water or other suitable fluid, and the pressure exerted by the concrete against the working face is

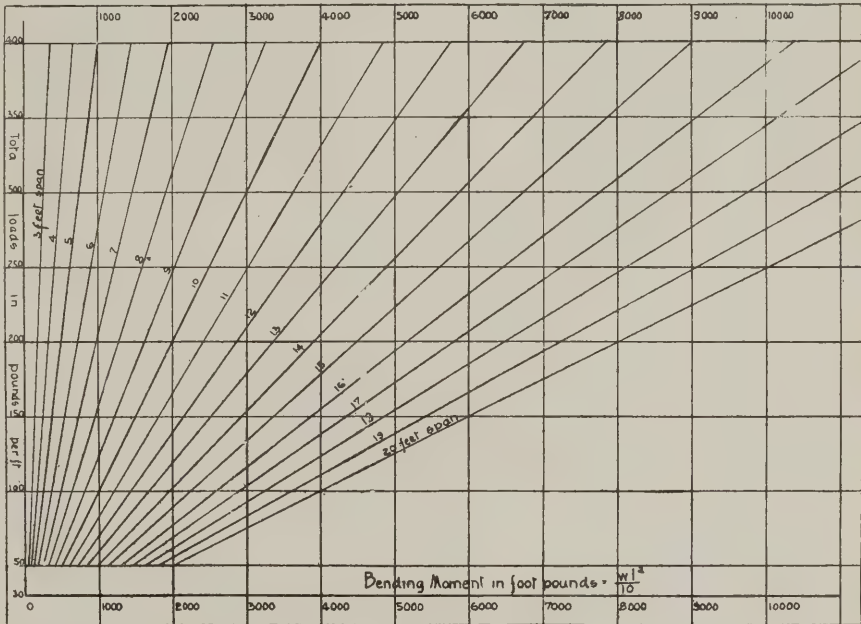


Fig. 1

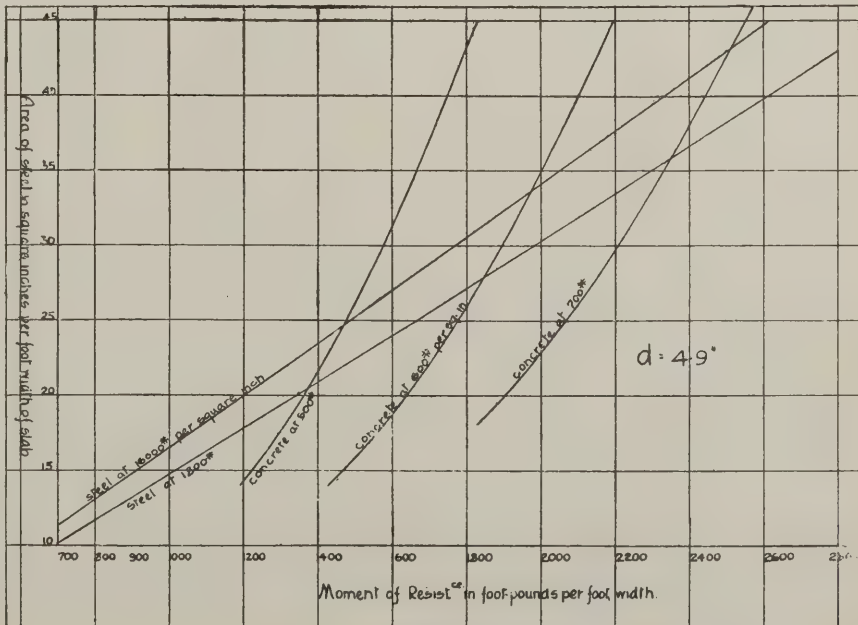


Fig. 2

recorded on two sensitive low-pressure Bourdon gauges, conveniently situated behind the chamber.

In the apparatus first used the chamber was formed of timber lined with zinc; this, however, distorted on becoming wet, and was abandoned in favour of cast iron. A glass tube water-column was also fitted for recording the pressures, but it was thought that the movement of the pressure face caused by the displacement of the water was not conducive to accuracy, as it caused the concrete to arch over, a movement that does not occur when Bourdon gauges are used.

A large number of experiments were made on different types of concrete structure. In heavy walls, large piers, and other members of fair size, the lateral pressure exerted was found to be fairly uniform and practically constant for equal heads; but in reinforced-concrete columns of small dimensions, thin walls, and other light concrete work, the effect of friction between the more or less rough timber forms and the concrete, together with the arching action, was found to reduce the pressure considerably.

Two sets of experiments are recorded in the diagram, having been selected from a number made; they represent those in which the conditions were most favourable.

The first series of tests was made during the building of a long wall about 3 ft. thick, constructed of concrete weighing 140 lb. per cubic foot and composed of slow-setting cement, sand, and crushed granite in the proportions of 1:3:6, by volume. In mixing, sufficient water was used to bring it to a thoroughly plastic condition, requiring little or no tamping to consolidate. The concrete was laid more rapidly than is usual in this class of work, being carried up as rapidly as the mixing and placing would permit to a height of 8 ft. above the centre of the pressure face, during which time a light iron bar provided with a turned-up end was used for churning the semi-liquid mass. Four complete sets of readings were taken, and each point on the curve represents the average value at that head.

The second series was carried out on large piers 4 ft. square, the concrete in this case being a 1:2:4 mixture of cement, sand, and Thames ballast, weighing 145 lb. per cubic foot. The conditions as to mixing and laying were similar to those of the first tests, and the concrete was carried up to a height of 10 ft. above the centre of the pressure face. Each point of this second series represents the average of six readings.

In the first series the temperature was fairly uniform throughout, while in the

second considerable variation was experienced; but the effect of the differences in temperature on the lateral pressure cannot be traced, and would appear to be very small.

The general conclusion to be drawn from these and other experiments is that the lateral pressure of concrete for average conditions is equivalent to that of a fluid weighing 85 lb. per cubic foot. For concrete in which little water is used in mixing the pressures are rather less, having an equivalent fluid value as low as 70 lb. per cubic foot in very dry mixtures.

THE NATIONAL FEDERATION SUMMER MEETING.

The National Federation of Building Trades Employers of Great Britain and Ireland held their summer or semi-annual meeting on Tuesday and Wednesday, July 30th and 31st, at the Exchange Hall, Nottingham. The Thursday was devoted to an excursion to "The Dukeries," where luncheon was provided in the riding school at Welbeck. The Council meeting on the Tuesday afternoon was followed in the evening by a dinner at the Victoria Station Hotel, where they were the guests of the local association of master builders, of which Mr. Crane is president.

On the Wednesday morning the members received a civic welcome at the hands of the Sheriff (Councillor J. Pycroft) and Councillor Atkey, the Mayor being unavoidably absent.

In opening the business meeting, the President, Mr. James Wright (Nottingham) extended a cordial welcome to the delegates from South Africa, Messrs. J. Prentice, J. T. Brown, Douglas, Evans, Kelly, Wilkinson, Matthew, and Alderson. Mr. Prentice, Mr. Douglas, and Mr. Brown briefly replied.

The President then moved the adoption of the interim report. The increasingly onerous duties, he said, that were devolving upon the president of the Federation were a sign of the larger field of work and responsibility upon which it was entering. Referring to the Town Planning and Housing Conference, he threw out a suggestion that the Government should "do something in the way of subsidising municipal or other bodies for the purpose of providing cheaper dwellings for the workers," and the remark provoked a most interesting discussion. He refused to credit the sensational statements that had appeared in the Press to the effect that the workers of this country were seething with discontent. Touching upon the matter of workmen's compensation, he said that while the Act might be right in principle it ought to be possible to administer it with a much greater regard for economy.

Mr. Stephen Easton, commenting upon the president's reference to municipal housing, contended that private enterprise in this matter was altogether more satisfactory.

Mr. S. Smethurst remarked that in Ireland the subsidising of public bodies had been justified against all economic teaching, and he thought that if money for the purpose could be obtained from the Government and placed at the disposal of persons—such as builders—qualified to use it to the utmost advantage in the building of wholesome houses for the poorest of the poor, we should be in a fair way to settle a most pressing problem.

Mr. F. G. Whittall remarked that a difficulty of the housing question was that to

house the poorly paid was virtually to subsidise the sweaters of labour.

Mr. A. G. White (secretary) then read the interim report, in which it was stated that since the last report two meetings of the National Conciliation Board had been held, at which the chief matters decided were an appeal from Leeds, which resulted in favour of the employers; an appeal from Birmingham as to the interpretation of the rule relating to demolition work, when it was decided that such work was builders' labourers' work down to floor level, but not the removal of material or excavation. Two meetings had been held of the National Joint Committee of Appeal under their agreement with the N.A.O.P.; in the matter of an appeal from Birmingham an advance was granted the plasterers to 10¼d. per hour, and the rules settled except as to the overtime rule, which was referred back for further consideration locally; the parties, however, failed to agree, and the matter was eventually settled by the National Joint Committee. In an appeal from York on the walking time rule a decision was given that the rule must remain unaltered until fresh notice. A meeting of the National Demarcation Committee was also held, and dealt with an appeal from Manchester. The case was a difficult one on account of the sharp conflict between the interests involved. Eventually a unanimous decision was arrived at by which the floating of any work which may have to receive a finishing substance (except asphalt) was agreed to be plasterers' work, all granolithic work to be done optionally by plasterers or concretors, all vertical or soffit work to be done by plasterers, floors finished for paving blocks in engineering works, etc., to be concretors' work. It was understood that all cases sent to the Northern Centre Board were decided there. The Midland Centre Board heard two cases, one went to the National for final settlement, the other granted an advance of wages to the carpenters and joiners at Sutton Coldfield (9d. to 9½d.). Some trouble had been experienced at Bristol, where the plasterers struck on the question of wages, having refused the offer of a halfpenny. The employers stood firm, and eventually the men agreed to accept the offer, it being understood that they were to be allowed to raise the question of a further advance later on. From reports received it was apparent that a general rise of wages of about a halfpenny per hour was in progress. In some few cases 1d. had been conceded and in others only ¼d. Dealing with the National Insurance Act, the report stated: "This Act continues to demand a great deal of time and attention from the Federation. The regulations issued for the carrying out of the detailed administration have been carefully examined, and where deemed likely to prove irksome to our members amendments have been secured. Especial attention had to be given to the question of responsibility for the contributions of subcontractors. There was an inclination to place this responsibility upon the sole contractors, but eventually it has been arranged that unless the sole contractor is entitled to the exclusive services of the subcontractor's men the latter remains responsible for the contributions of his men. The numerous applications to the umpire for decisions as to whether certain classes of men were of a class in respect of which contributions should be paid have needed constant supervision, much correspondence, and numerous attendances before

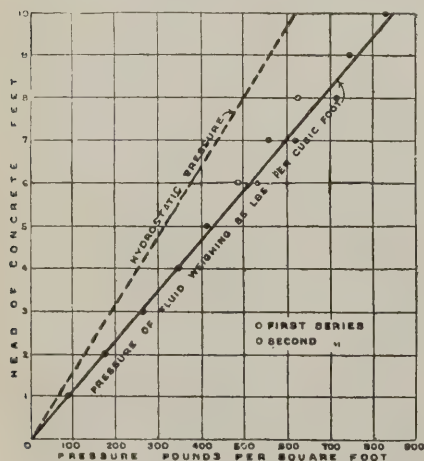


DIAGRAM OF COMPARATIVE PRESSURES.

(Continued on page 183.)

the umpire in order to prevent the exclusion of classes of men in the service of firms or public bodies not engaged in the building trade, but engaged, all the same, on work commonly carried on by building trade firms. It was obvious, unless the workmen employed by such private firms or public authorities were brought under the Act, that a most unfair kind of competition would arise to the detriment of the building trade, and the efforts of the representatives of the federation have been fairly successful in averting this. There are, however, still many decisions to be given, and continued vigilance will be necessary."

Mr. W. H. Hope having thanked the president and council for their labours, the report was unanimously adopted.

The Secretary read a letter from the Birmingham Association calling attention to a paragraph which appeared in the "Times" of July 20th, stating that the contractor for the new Cardiff reservoir had suggested that the Cardiff Corporation was the ultimate employer under the National Insurance Act, and asking them to cover the extra payments under the Act. If the contract had been made in full cognisance of the impost, it would have added very considerably to the amount of the tender.

Mr. G. H. Wright (Birmingham) suggested that contractors could justly make a claim upon the Government for recompense on the losses they would sustain upon contracts affected by the premature operation of the Act.

Mr. W. Thomas (Cardiff) suggested that the matter should be referred to the Federation Council.

Mr. A. J. Forsdike (Sheffield) said that he had had personal experience of the unfair burden imposed upon contracts that had been signed without taking into account the obligations imposed by the Act.

Mr. W. H. Hope (Sunderland) supported the suggestion made by previous speakers that counsel's opinion on the subject should be taken. He thought that at the same time advice should be taken as to the inclusion of a clause in future contracts with the object of relieving the contractor of the burdens which might be thrust upon them at short notice by Parliament.

After suggestions from various speakers, Mr. Moss moved: "That counsel's opinion be taken on the general question: (a) What is a contractor's position with regard to the Insurance Act under Parts I. and II. in contracts entered into prior to the Act being passed and still being carried on; (b) What is the contractor's position with regard to the Insurance Act under Parts I. and II. in contracts entered into after the Act was passed, but before the Act became law, and still being carried on; also to draft a clause to avoid such burdens being imposed in future in respect of contracts running." This was carried unanimously.

A circular letter was read from the Engineering Employers' Federation stating that the committee of that body had resolved to recommend that all firms belonging to that federation should deduct from wages the proportion of contributions payable by the workpeople under the National Insurance Act, and expressing the hope that the members of the building trades would adopt this course.

The President moved: "That all associated members be recommended to deduct from their employees their proportion of contributions under the National Insurance Act, except in the case of indentured apprentices under Part I. of the Act."

This resolution was carried with two or three dissentients.

The President then referred to the under-

valuing of house property under the Finance Act. The following resolution was proposed: "This conference of building trades' employers of the United Kingdom records its unanimous and strong protest against the practice of undervaluing house property by the official valuers under the Finance Act, 1909-10, which obtains, many of the valuations being 5 per cent. to 15 per cent. under prime cost. As a result the confidence of investors is shaken, sales are stopped, and severe depression exists in this branch of the building trade, and serious loss accrues to those engaged therein. This conference respectfully asks that the Government will receive a deputation from this Federation, so that the facts known to our members may be laid before it."

Mr. Moffat and Mr. Sinclair supported the resolution, which was carried.

At the suggestion of Mr. Smethurst, it was decided to refer to the Administrative Committee the desirability of bringing a test case before the referee with regard to the question of taxing builders' profits.

The business then ended. In the afternoon the Sheriff gave a garden party at the Castle, but, the weather being unfavourable, the guests were entertained in the long gallery, where Mr. Harry Gill delivered an interesting address on the history of the Castle. In the evening the members were entertained to supper in a large marquee in the Castle grounds.

THE UNIVERSITY OF SHEFFIELD DEPARTMENT OF ARCHITECTURE.

A new prospectus of the Department of Architecture of the University of Sheffield has just been issued. The next session will begin on October 2nd. The Department, in which the lecturer is Mr. W. S. Purchon, A.R.I.B.A., provides: (1) A two years' day course; (2) an advanced course for diploma, part day, part evening; (3) an evening class in architectural drawing; and (4) courses in surveying. A preliminary year course has been arranged to meet the requirements of the R.I.B.A. preliminary and the matriculation examinations. Students who obtain the First-Class Certificate (awarded at the end of the third year) are exempted by the Royal Institute from all but the Final Examination qualifying for A.R.I.B.A. Students who are unable to take a complete course may, by arrangement, attend any part or parts of the day or evening courses approved by the lecturer.

CRYSTAL PALACE LECTURES ON REINFORCED CONCRETE.

On July 3 and 17 Mr. W. Noble Twelves delivered two lectures on reinforced concrete to the students of the Crystal Palace School of Practical Engineering. The first lecture dealt with the fundamental principles of reinforced concrete construction and the general theory of beam design. The second lecture was devoted to the principles underlying the design of columns, struts, arches, and other forms of structural elements, and to various aspects of practical construction in reinforced concrete. This lecture was illustrated by specimens of various types of reinforcing steel, as well as by models and photographs of works executed in the United Kingdom.

COMPETITIONS.

Additions to the Wharfedale Isolation Hospital, Menston, Yorkshire.

Owing to the accommodation of the above hospital being inadequate, the committee decided to invite architects practising in Wharfedale to submit designs for new diphtheria and convalescent pavilions, also a new wing to the present administration block. Messrs. J. H. Wall, Otley; Harold Chippendale, Guiseley; A. Marshall and Son, Otley and Leeds; and Empsall and Clarkson, Bradford, sent in designs. The design No. 3 was recommended as most suitable and unanimously adopted by the committee. On opening the sealed envelopes this was found to be the one sent in by A. Marshall and Son, who have received instructions to carry out the work, the cost of the scheme being about £3,000 to £4,000.

Design for Farmhouse at Earlswood.

The first premium in the above competition, promoted by the Reigate Corporation, has been awarded to Mr. W. Newton Dunn, of Glenfenlin, Reigate, and Bucklersbury, Cheapside, E.C.

King Edward Monument, Ottawa.

The date for sending in designs in the above competition has been extended to November 1st. Designs may be in the form of a portrait, statue, or symbolic memorial. The Advisory Arts Council for the Government of the Dominion will adjudicate. Sketch models in plaster on a scale of 1½ in. to the foot should be forwarded to Mr. Eric Brown, Director of the National Art Gallery, Ottawa, Canada. The monument, including the pedestal, is not to exceed a cost of about £7,000.

Royal Palace and Law Courts, Sofia, Bulgaria.

Architects desiring to take part in the competition for (1) a new Royal palace and (2) new law courts, at Sofia, may inspect the revised conditions (in French) together with drawings, at the Commercial Intelligence Department of the Board of Trade, 73, Basinghall Street, E.C. Designs are to be submitted not later than December 1st to the "Section d'Architecture au Ministère des Travaux Publics," Sofia.

Lay-Out of Reigate Lodge Estate.

Mr. Raymond Unwin, the assessor in the competition for the lay-out of part of the above estate, has awarded the premiums as follows: 1st, Mr. Vincent Hooper (of Messrs. T. R. and V. Hooper, Redhill); 2nd, Mr. Reginald Dann, "Kilronan," Furze-field Road, Reigate. Forty-five designs were submitted.

Grand Prix de Rome d'Architecture.

The Grand Prix de Rome d'Architecture has been secured by M. Jacques Edouard Harold Debat-Ponsan, a pupil of MM. Laloux and Tronchet. He entered the Ecole des Beaux Arts in 1903, and is now thirty years of age. The premier and the deuxième Grand Prix in the second class have been won respectively by M. Louis Grégoire and M. Henri-Roger Expert.

Huddersfield Town Planning.

As already announced, the Town-Planning Committee of Huddersfield Corporation invite competitive designs for the lay-out of certain districts within the area of their jurisdiction, and require a deposit of £2 2s. for particulars. In the advertisement no mention is made of an assessor. It is to be hoped that an architect has been appointed to fulfil that function.

(The list of Competitions Open is given on page xviii.)

IN PARLIAMENT.

*(By Our Press Gallery Representative.)**Government Buildings and Outside Architects.*

In the House of Commons Mr. Goldsmith asked Mr. Wedgwood Benn, as representing the First Commissioner of Works, to state the number of buildings erected by the Office of Works, to the design of architects not connected with the Office of Works, since January 1st, 1907.

Mr. Wedgwood Benn replied that no new buildings designed by outside architects had been commenced since January, 1907, but several had been in course of erection which were commenced prior to that date, viz., Victoria and Albert Museum; Admiralty Buildings, Block IV.; British Museum Extension; Public Offices, Whitehall.

Mr. Goldsmith asked whether the honourable member was aware that the Office of Works had spent over £4,000,000 in the last four years on the erection of new buildings and apparently the whole of that work had been done by the official architects of the Office of Works, and whether he would see that in future outside architects were given a chance of competing with the official architects.

Mr. Wedgwood Benn replied that he could not say without reference whether the figures given by Mr. Goldsmith were correct, but there was no reason why the Office of Works should change the course which they had adopted.

Mr. Goldsmith remarked that the figures were those which Mr. Wedgwood Benn gave him the previous week.

Lighting of the Terrace.

Mr. Patrick O'Brien asked a question relating to the insufficient lighting of the Terrace of the Houses of Parliament and the use of antiquated burners, and suggested that up-to-date burners giving an illuminating power of fifty candles should be put in the Terrace lamps.

Mr. Wedgwood Benn said the First Commissioner had no reason to suppose that the House generally desired a greater illumination on the Terrace, but he was quite prepared to meet the wishes of members in the matter. The saving in gas by substituting incandescent burners for those now in use would not be very great.

Architectural Decorative Work.

Mr. Grant asked the President of the Board of Education if the South Court of the Victoria and Albert Museum contained sculptured monuments to which several casts in an adjoining northerly court were germane from the point of view of art and education; if the metal-work collections were exhibited in courts still further north; and whether the casts of sculptured monuments were originally acquired by the museum for the special purpose of supplementing the collection of cognate original sculptures with a view to forming as complete an illustration of such architectural decorative work as was reasonably possible.

Mr. Joseph Pease, in a printed reply, stated: The answer to the first part of the question is in the negative. The sculptured monuments presumably referred to are placed in the West and East Halls (Rooms 48 and 50) and the casts in the Square Court (Room 46). The South Court and the adjacent bays (Rooms 25 to 37) contain some of the metal-work collections.

The answer to the last part of the question is in the affirmative.



The above illustration shows a Bronze Medallion recently designed and carried out by Messrs. E. Pollard and Co., Ltd., for the new Quebec Building in Kingsway, W.C. The crown and wreath are gilt, the shield in the centre and the motto beneath being enamelled in heraldic colours. Two of these medallions are fixed on the pilasters on either side of the entrance to the building.

BRONZE MEDALLION ON THE QUEBEC BUILDING, KINGSWAY, W.C.

CERESIT WATERPROOFING.

An illustrated booklet describing "Ceresit and its Uses in all Building Operations" has been issued by the British Ceresit Waterproofing Co., Ltd., Princes Mansions, 68, Victoria Street, London, S.W., who adduce many convincing proofs of the value of their preparation in a wide variety of applications. Ceresit is an odourless light-coloured paste of about the consistency of butter. Dissolved in water and mixed with cement mortar, Ceresit will, it is claimed, render the mixture impervious to water, even under highest pressure. As it does not colour the cement mortar, the mixture can be used as a waterproof facing. Not only is it colourless, it is also odourless, and can therefore be used inside inhabited rooms, as well as in places of storage for easily perishable goods, such as butter and other foodstuffs, and it is very generally used for waterproofing reservoirs which are to contain drinking water. It prevents the growth of fungus, and is an antidote to sweating and all the evils that arise from dampness, such as dry rot, mouldy wall-papers, the peeling of plaster, etc. The booklet gives explicit directions for the use of Ceresit on weatherside and interior walls, roofs, and balconies, in the formation of damp-courses, and the waterproofing of cellars, water-tanks, and floors. A long list of

clients by whom Ceresit has been employed includes H.M. Office of Works, the War Office, the India Office, the Metropolitan Asylums Board, the New South Wales Government, the Crown Agents for the Colonies, the High Commissioner for the Union of South Africa, the Soudan Government, the Irrigation Branch of the Public Works Department of the Punjab, Khartoum Public Works, Northampton County Asylum, and very many municipal corporations, railway companies, besides an imposing array of eminent architects. In the report on a test made at the National Physical Laboratory, Teddington, two slabs, each $1\frac{1}{2}$ in. thick, and each made of three parts of sand and one part of cement, and both made from identical materials, except that in the one Ceresit was added, and not in the other, were subjected to a water-pressure of 4.34 lb. per square inch. At the end of four-and-twenty hours, the untreated slab was found to be saturated with water which was dripping from the exterior surface, whereas the exterior surface of the slab treated with Ceresit was found to be perfectly dry, and, the pressure having been maintained ever since January 19th, 1912, the Ceresit slab had showed no sign of dampness on July 1st. The Town and Country cross sewage disposal officials also report in detail, that their "experiments carried out with Ceresit were entirely satisfactory," and add that "there can be no doubt that it is quite waterproof."

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AUGUST 21st, 1912.

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"EAST WEALD," HAMPSTEAD: DETAIL OF SOUTH FRONT.
H. V. ASHLEY AND WINTON NEWMAN, F.F.R.I.B.A., ARCHITECTS.



Photo : Thomas Lewis.

Thames House is a large block of buildings recently completed, on a site at the corner of Upper Thames Street and Queen Street Place, as the chief office of the Liebig Extract of Meat Co. The entrance halls are very effectively carried out in "stucc" and plasterwork the ceiling treatment being particularly successful.

LOWER ENTRANCE HALL, THAMES HOUSE, LONDON, E.C.
STANLEY HAMP, A.R.I.B.A. (COLLCUTT AND HAMP), ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

AUGUST 21st, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 918.

State-Aided Art-Training



When reviewing the other day the exhibition of work done by the students of the National Art Schools we referred to the object with which the Government Art Schools were originally founded, the improvement, namely, of industrial and applied art in English manufactures. The 1851 exhibition, though it probably contained a great deal of very bad art of this class, was (perhaps for that very reason) the starting-point of a new endeavour. It was felt by the few influential persons who were then competent to form a judgment on the subject that we were behind other countries in the artistic treatment of manufactured work, and that some definite steps should be taken to instruct designers in a better path. The results in one sense are satisfactory enough; the annual exhibitions of the work done in our art-schools always show a great deal of good design for textiles, wallpapers, and other similar materials, which are in excellent taste and sometimes display a great deal of originality of invention. It is in this class of work that the exhibited designs are always the best. Architecture takes generally but a poor place; and figure-drawing is, naturally, not up to the standard which is maintained among the students of the Royal Academy and the Slade School, which are bodies professedly engaged in training their students to become painters and sculptors, not to become applied art designers: in fact, the latter object is hardly taken any account of, apparently, at the Royal Academy, which may be one reason for the fact that sculptors, at all events, rarely succeed in any merely decorative details attached to their works; sculptors' pedestals, when designed by themselves, are rarely satisfactory, because this is a class of work in which they have had no special training. The best decorative design, among the students of bodies specially engaged in art-teaching, is found not at the Academy nor at the Slade, but among the national schools and the Royal College of Art exhibitions of work. Yet these do not seem to have succeeded in influencing very much the manufacturers or the public either to produce or to demand the best class of design.

The subject has been rather prominently brought forward the last few days in letters to the daily papers, particularly a long one in the "Times" from Mr. Walter Crane, who, to begin with, opposes strongly the depreciatory criticisms which have been made as to the character of the work done, and asserts, quite justifiably, that the exhibitions both of the National Art Schools and of the Royal College of Art "contain very remarkable and beautiful work—work of which any country might be proud, and which I greatly doubt could be equalled in any other country at present." As far as the applied art designs are concerned we believe he is perfectly right. Of course, the very best applied art work produced in England is not to be found in these students' exhibitions; it is in the productions of individual artists who have

devoted themselves to decorative design; in Mr. Crane's own work, for instance, and in that of artists like Mr. and Mrs. Nelson Dawson, and others. But even the students' work has this merit, that they are on the right track; they have acquired the true perception of what to aim at in this class of design, what lines to work on. You hardly ever find in the designs of the National Art students anything that is in bad or false taste; a design may be feeble or uninteresting but it will never be vulgar; and that one can be able to say that, when we remember what middle-Victorian applied art was like, shows what a progress has been made with us, mainly owing to the teaching of the art schools and to the wide influence exercised by William Morris. In applied decorative design England, which half a century ago stood so low, may now claim, we believe fairly, to be superior to any other nation. The French are the masters of the world in sculpture and painting, but their decorative art, as seen in such things as furniture and jewellery, is costly, pretentious, and vulgar; the trail of the "article de Paris" is over it all; and some of their exhibited wallpaper designs would be scoffed at at South Kensington, whether in respect of colour or design. The German work of this class is somewhat better; it is often exceedingly clever, but cleverness and the effort to do something unusual and unexpected is the prevailing impression we get from it, and that is not the best sort of impression to get from decorative design. The best kind of originality, as the late Mr. Lewis Day truly said in his book on "Nature and Ornament," is that which is based on traditional forms. And in England we do produce that kind of design; not only produce it in isolated cases, but have made it a standard in our art schools. What is wanted is to bridge over the gulf between the artists on one hand and the manufacturers and the public on the other hand.

Before considering this question, as Mr. Crane in his letter above referred to mentioned also the work of the Royal College of Art students, we may say a few words about their exhibition, which might have been described at the same time as the National Art competition designs, but for the fact that while the former sent us a special card of invitation, the Royal College of Art, for some reason, neglected to do so. The College of Art exhibits are in ranges of rooms on two floors in the brick building at the back of the old College of Science building, facing the clever but now very dingy sgraffito decorations on the back of the latter erection. These, by the way, are rather a lesson in the fact that sgraffito is not a form of decoration to retain its value long in a smoky town, and it is not very easy to see how its pristine effect can be revived, except by painting over the light and dark portions. We fancy few people see this sgraffito wall now; but it is worth while to look at it, for it is (or was once) a very good piece of exterior wall decoration, and at the time it was done was a new application of an old and nearly extinct method. However, this is a digression; let us turn to the Royal College designs. That the architectural work should be far superior to that of the National Art Schools is only what one would expect, seeing that

one of the most talented architects of the day is teacher there. But the largest and most important drawings exhibited deal with a subject that rather gives us pause. These are two designs for completing Westminster Abbey by the addition of a central tower and spire, and new towers and spires at the west end. This seems to have been a subject set for some of the advanced students; an ambitious and interesting one enough; and the drawings, one set especially, are really very fine, with some detail drawings on a large scale. But the Professor should surely have asked his students to consider whether there was any possibility of planting such a central erection on Westminster Abbey. There is none; the crossing piers would not stand it; they are already somewhat buckled and, even if they were entirely sound and plumb, their mass is not sufficient to carry a centre tower; it could not be done without shoring up the arches and rebuilding the piers on a larger scale. We did not notice that there was any plan showing what this central tower was to stand on. And it is very doubtful whether Westminster was ever intended to have a central tower. It is a cathedral with a French plan and proportions, built apparently under some kind of French influence, and it is probable that what the builders thought of as a central feature, if they thought of it at all, was a light *flèche* such as is usually found over the crossing of a French cathedral. At what date the low walls were built which are just high enough to stop the roof-ridges seems rather uncertain. But all that could be done with it now would be either to make the existing walls the base for a timber lantern—and that would make a good subject for study—or to remove the existing walls where they come above the roofs, carry on the ridges to meet at the centre, and erect a *flèche* there in the French manner. The western towers and spires could be done well enough, but we doubt if they would be regarded as an improvement to the church. What is wanted at the west end of Westminster Abbey is to take down the upper eighteenth century portion of the towers and rebuild them to much the same height and proportion with correct Gothic detail, to harmonise with the lower portion. The general proportion of those towers (which we are convinced were designed by Wren, though not carried out till after his death) is very good; in that respect they are quite suitable to their position; it is only the detail that spoils them. If the task set had been to do this, and to design a central *flèche* which could be safely erected on the crossing, it would have been a more useful and reasonable one.

Among the other exhibits there are some good essays in architecture and decoration. W. Norton seems to be a student of considerable and varied abilities, though his painting of trees as a wall decoration is an æsthetic mistake. He shows a good design for the decoration in colour of a small church; one for an entrance hall to a museum, not quite so good; a good incised figure-drawing on a tile, and a very fine design for woollen tapestry, with a figure in the centre of a mass of richly coloured conventional foliage. There are a number of designs for textiles, quite as good as those of the National Art schools; among them we noticed a very good one for printed cotton by K. Easmon. Of the elevations for the treatment of the side of a room, the best is the very broad and simple one by R. B. Bessant, an oak-panelled room with round-headed windows; some of the other designs of the same class are rather too busy and pretentious, though most have merit. Among the other designs of architectural character are that by F. Davis for choir stalls in Renaissance style; that by W. Marsden for a mural monument to an artist, to be executed in marble and bronze—this is on the lines of the form of Renaissance monument so common in English churches in the seventeenth century—an arched alcove between columns; and the study by W. Chester for the marble and mosaic decoration of a mausoleum chapel. The whole collection is an excellent testimony to the good work the Royal College is doing, and the architectural work is important,

whereas in the National Art Schools it is almost a negligible element.

And now to come to what is really the main point of Mr. Walter Crane's letter, the want of relation between the excellent work done in applied art both in the Art Schools and the Royal College, and the actual work sold by manufacturers and purchased by the public. The grievance, as he says, is that the able and well-trained students cannot find the work they were trained to do at the Art School or the College. "There is an apparently hopeless disparity of aim between the artist and art-master on the one hand and the trade and the public on the other. And yet the supremacy and originality of English decorative design has been acknowledged throughout Europe." We suspect that the immediate fault lies with the public, who do not understand or desire the best class of design; the manufacturers, of course, care only for supplying what the public demand. The manager of a Manchester firm chiefly occupied in exporting printed cotton stuffs admitted to the writer that it was only a matter of chance which pattern had a good sale and which had not; there was apparently no sort of principle of selection; patterns offered to the firm were purchased and printed on the speculation that they would prove attractive, but no one could ever say which would prove a commercial success; it was all a chance. And apparently no one ever knows the names of the designers; they are hireling artists who are kept in the background; the middleman or merchant of the designs alone is known. And one manufacturer, in giving evidence before the Departmental Commission on the art schools, declared roundly that in the trade they had no use for designers from South Kensington; obviously not because he had any opinion of his own on the designs, but because South Kensington did not produce what the public wanted. Mr. Crane suggests one excuse for the public, that the Government do nothing to render the exhibitions of work popular or attractive; the Art Schools Exhibition is held in a temporary building on waste ground at the back of the Natural History Museum, a place where no one would ever think of going unless specially directed to it; and the Royal College Exhibition is in a back building also, and so far from any means being taken to attract the public to it, our representative, on going through the archway which leads out of the street to the back of the Science School, was stopped by an official out of a sentry-box who asked what he wanted. It is no wonder, when things are mismanaged in this way, that little public interest is attracted to what the Art Schools and the College are doing. If the exhibitions were held in a prominent and easily accessible building, and some lectures given there on applied art, illustrated by objects before the eyes, there would be some better chance of gaining the appreciation and interest of the public.

There is another body which might do something to stimulate interest and ambition in regard to applied art, and does nothing; that is, the Royal Academy, which apparently recognises no arts but painting, sculpture, and architecture, and gives a disproportionate space, for obvious reasons, to the popular art of painting. Mr. Powell, of Whitefriars, says very truly that "some effort should be made to bring the public into closer touch with the producer," and suggests that it would be a step towards this end if selected specimens of industrial art were admitted into the winter exhibitions of the Royal Academy. But why into the winter exhibitions? That would be the place for ancient examples of industrial art; modern designers should find place for their works in the summer exhibitions. Designers would then receive the encouragement they deserve, and the public would have a chance of learning something about decorative art. Leighton would certainly have approved the idea. But at present there seems little chance of it being acted on. The Academy is mainly a body of painters, and seems, in its corporate capacity, to care little for art in any other form.

The Advertisement Board Nuisance.

AN announcement appeared last week in the daily papers which shows that the efforts made for years past by Mr. Richardson Evans, and the society which he founded for checking the abuses of public advertising, are likely at last to have a definite and probably a wide-spread result. The Kent County Council have adopted, under the Advertisements Regulation Act, 1907, a by-law to prevent the disfigurement of the landscape by the erection of advertisement boards. The by-law, which is to apply to all parts of Kent except municipal boroughs and urban districts with a population of over 10,000, provides that no one shall exhibit any advertisement which shall be visible from any public highway or foot-path, or from any railway or open land or water open to the public, and so placed as to disfigure the natural beauty of the landscape. Thus the irritating display of advertisement boards of quack medicines and other such things, which line the course of railways, will at one blow be put a stop to over a whole county. We

felt pretty sure this would come some day, but hardly expected it so soon. Kent has set an example which there can be little doubt will before long be followed by other county authorities.

French Gothic.

WE may congratulate "The Times" on the publication, in its issue of August 16th, of an exceedingly good article on French Gothic architecture, the work of some one who thoroughly understands the subject. The article takes the entirely sound view that France is the true originating country of Gothic architecture, but without undervaluing the characteristic and rather different merits of English Gothic; these two types of Gothic, and the points in which they differ, are exceedingly well analysed, and the writer points out, quite truly, how the exterior of the great French cathedrals, with their masses of buttresses and flying buttresses, is essentially engineering—the provision for holding up the lofty interiors which are the great glory of French Gothic. The appearance of so able an article on such a subject in a daily paper is a sign of the times, and an indication that architecture is much more a subject of general interest than it used to be.

Why Building Costs More than it Did.

THE cause of the great increase in the cost of building during recent years has been the subject of much unsatisfactory speculation. In order to arrive at some definite solution of the question, we have carefully examined the prices both of materials and labour over a period of more than a century, and the results of our investigations are presented elsewhere in this issue. It will be seen that there has been a greater increase in the cost of labour than in the cost of materials. While wages have increased by, roughly, 100 per cent. during the last century, materials show a much lower proportionate advance in cost. Some materials, as a matter of fact, have actually decreased in cost, a circumstance which is probably explained by greatly improved methods of production. Some materials have remained almost stationary, while others show a considerable addition. To enhanced wages, therefore, the increased cost of building is to be mainly attributed. Current legislation has, of course, exercised a depressing influence on building enterprise, and increased competition for a rapidly decreasing amount of work has resulted in cut prices, greater economies, and smaller profits. These various factors have all contributed to the trouble. Wages show a progressive advance, and as will be noted, further increases are to be made in certain trades both this year and next year, according to the London County Council schedule.

An Architectural Scholarship.

PARTICULARS are just to hand of the scheme of competitions for the new Scholarship in Architecture at the British School at Rome. We have not space in this issue to give all the details, but the following statement covers the main points: The Scholarship will be £200 per annum, and will be tenable for three years. The competitions will be conducted by the Faculty of Architecture of the British School at Rome. The examinations will be graduated and in three stages: (A) An open qualifying examination; (B) A first competition, open to candidates selected in the open qualifying examination, to the winners of certain scholarships (the R.A. Travelling Studentship, and the Soane, Tite, Owen Jones, Ashpitel and Grissell, of the R.I.B.A.), and to candidates nominated by certain bodies; (C) A final competition, open to not more than ten candidates selected from the candidates in the first competition. Candidates must be British subjects, and less than thirty years of age at the date of entry for the final competition, which will be held in September, 1913.



DOORWAY TO AMES HOUSE, MORTIMER STREET, LONDON, W.
PROFESSOR BERESFORD PITE, F.R.I.B.A., ARCHITECT.

HERE AND THERE.

UNDER this heading from time to time I propose to write on matters which interest me, and which, I think, are of interest also to all connected with architecture and building. My notes will be essentially personal in character; they will express my own opinions; and they will be written quite independent of the editorial direction of this journal. Under these conditions it will be permissible to put matters into print with a far greater freedom than is possible when a writer is weighted with the dignity of editorial responsibility; there are many things which a correspondent can say that an editor cannot; and it is hoped, too, that some criticisms may be made in a vein that is lighter than one is accustomed to find in the pages of a technical journal.

* * * *

As a commencement, let me refer to the excavations which have been going on for some time past on behalf of the Palestine Exploration Fund, and for the support of which an appeal is now being made. The site is at "Bethshemesh," a place which ninety-nine out of every hundred architects have never heard of, and would not be vastly concerned about if they did. We are told that "during the last few weeks an undoubted 'High place,' with five prostrate 'pillars' (*masseboth*), has been unearthed, and what is probably an extremely early sanctuary-grotto below this 'High place' has been opened up, but not yet explored. During the same time a grotto, with the most primitive interments and a great quantity of unbroken pottery (food and drink offerings), has been laid bare; it goes back at least to 1500 B.C. The solution of the problem of the water supply of the ancient walled-in city seems to be almost revealed, for a huge well mouth has been uncovered and followed down a few feet." Now all this is no doubt very interesting to Biblical scholars who want to discover the vexed question of the origin of the Philistines, and to archaeologists who spend their whole lives in digging and prodding about the earth looking for things which are not of much account when they find them; but architects are not similarly interested. The truth is, we have had far too big a dose of archaeology. I have attended a good many dozens of meetings of architectural societies, and I have noticed the apathy that exists in regard to matters archaeological. I have listened to weary old fogies who went on interminably about some quibble over the precise spot on which this temple stood in some out-of-the-way corner of Italy or Greece, and there has been a lengthy comparison of this and that fragment of some church of quite insignificant importance; all the while there are architects around whose designs make one sick to look at. There's the whole matter in a nutshell. It is the product of to-day that should take first place, and training in design in a modern spirit is a far greater need than any amount of archaeology. After all, the main facts about the great buildings of Greece and Rome and the Middle Ages have long ago been discovered, and it is of very little account whether this or that trifling variation in detail or arrangement is ascertained or not. Architects would be far better employed in seeing how those splendid public buildings of the United States are produced at the present time, and how the French manage to be so successful in their treatment of public monuments, than rummaging among the dead leaves of a thousand years past. It is very much the same in the teaching of history. When I was at school we seemed to spend an unconscionable time over Hengist and Horsa and Canute and King Alfred and John, but we never got hold of the spirit which animated the Elizabethan era, while the school term always seemed to come to a close by the time we reached the Georges and the reign of Victoria. Yet it is much more important to know something intimate of Georgian England, of the Corn Laws, and the Indian Mutiny than to be familiar with the story of William the Conqueror's personal misfortunes at the battle of Mantes,

or the plight of Queen Matilda. Similarly, we need to keep archaeology at a safe distance; and, as architects, to see that we do not let it swallow up the time and interest that could be devoted to better things.

* * * *

The steady completion of the Wesleyan Hall at Westminster gives point to a feature of some modern work which meets with a good deal of favour. But first let me record my admiration for the building with which Messrs. Lanchester and Rickards have enriched Westminster. It is truly a noble building, rising in majestic proportion from a cliff-like base, and crowned by a dome which is one of the most successful in modern London. You may criticise the sculpture which adorns the base, you may say that on a building which is intended to house a Christian institution of peaceable character it is incongruous to see carved the lictor and staves, and the body armour of Roman days (is it supposed to typify the scriptural injunction to put on the whole armour of faith?); nevertheless, as decorative sculpture it is very fine, and admirably placed: and it will generally be admitted that the building as a whole is a conception of outstanding merit. The criticism about it which I have to make is the treatment of the doorways. These are positively cavernous. The central doorway is not yet fully disclosed, but the side entrances, to the bank which occupies one corner, and to the offices, are quite finished and they seem to have been admitted into the design only on sufferance. They cannot be hidden away, but the architects have certainly not gloried at all in them. Doubtless it was thought that these openings in the base of the structure would, if emphasised, produce a feeling of weakness. But, after all, the entrances to a building, and especially the main entrances, deserve to be emphasised. Another example of this non-recognition of the claims of the chief doorway is to be seen in the new addition which is being made to the British Museum. Here we have a great range of columns, and, in the midst, a small opening that looks as though it led to the basement, but is in reality the principal means of access to the new galleries. It should be noted that this is the rear elevation of the British Museum; it is not a side elevation, and the doorway is certainly an architectural mistake. Either it should have been on a huge scale, like that to the Palais de Justice at Brussels, or it should have been omitted altogether, more especially as this doorway terminates a vista along what will be an important wide thoroughfare.

* * * *

I note that under the title of "Vienna Works, Limited," a company is being floated with a capital of £105,000, to carry on business as "architects, surveyors, builders, merchants, factors, manufacturers of and dealers in textile, leather and fancy goods, jewellery, furniture, works of art, etc.; to take over the business carried on in Vienna as Wiener Werkstaette; and to acquire in Vienna aforesaid, or elsewhere, any lands, buildings, warehouses, shops, or other property, etc." There is a catholicity of taste about this company that I like. The idea of being at one and the same time dealers in architectural designs and plush photo-frames is distinctly encouraging, and it only shows what one can do when the right spirit is at work.

* * * *

Mr. Raymond Unwin, I see, has been telling the story of the architect who bothered Queen Anne so much about the design of St. John's Church, Westminster, that she kicked over her footstool and said, "Build it like that," which explains how a church with four similar towers at the corners came into existence. This reminds me of the architect who submitted a design for a church to the German Emperor. The Kaiser hastily put a cross on the drawing as the mark of his approval, and the architect, not liking to ask questions of his royal master, took it, by mistake, to mean a large cross on his spire; and so, poor man, he built it!

UBIQUE.

A HOLIDAY COMPETITION.

The holiday competition which we instituted is now in full swing. Many readers have sent in photographs, and from these we give this week two views of Ightham Mote, Kent, forwarded by Mr. Charles A. Longley, of London, S.E., who sends also the following descriptive particulars: "This fine old moated mansion is situated about $4\frac{1}{2}$ miles south-east of Knole House, Sevenoaks, Kent. Two views are here given, one taken from the angle, showing the embattled tower and hall, and the other showing the work of the respective periods and the moat. The plan of the mansion is a quadrangle, with bridge, gateway, tower, hall, chapel, and Elizabethan outbuildings. The architecture is of three distinct periods. The oldest part dates from the reign of Edward III., having been built about 1340 by Sir Thomas Cawne, in whose family the house remained for some years. The mansion that existed prior to this date, in the reign of Henry II., belonged to the de Hauts. The estate was confiscated by Richard III. and granted to Sir Robert Brackenbury, but in 1485 Henry VII. restored it to the de Hauts. In 1521 Sir Richard Clement of Milton purchased it, but not many years afterwards (i.e., in 1544) it was sold to Sir John Allen. In 1592 it was purchased by Sir William Selby, of Northumberland, and it remained in this family until 1888. Both the old hall and chapel are perfect, while the groined vault and window looking on to the moat, and the chamber or old chapel over, are of the greatest interest. The gateway, tower, and chapel on the first floor, the fireplaces and windows, dating from 1457 to 1500, are fine examples of the domestic work of that period, while most of the buildings outside the moat and forming the last part of the work are Elizabethan. Ightham Mote is now the residence of T. C. Colyer Fergusson, Esq., J.P."

The photographs desired are of buildings, or details of buildings, interesting to the architect, and out of the ordinary class of illustrations: perhaps a little Renaissance house which has passed almost unnoticed, a piece of good ironwork, a fine old barn, or a delightful example of a wayside cottage. Photographs of a hundred-and-one such things are taken, but never published. For such photographs as we reproduce we will pay on each a fee of 5s. or 10s. 6d. (according to the value we place on them). Prints should preferably be on glossy paper. It is optional whether they are mounted or not, but the name and address of the sender must appear on the back of each. The photographs must have been taken this year. There is no stipulation as to size, but as they are intended for reproduction, the larger the better. It is desired also that competitors should send with their prints a brief description of the work shown.



Photo: Charles A. Longley.

IGHTHAM MOTE, SEVENOAKS.

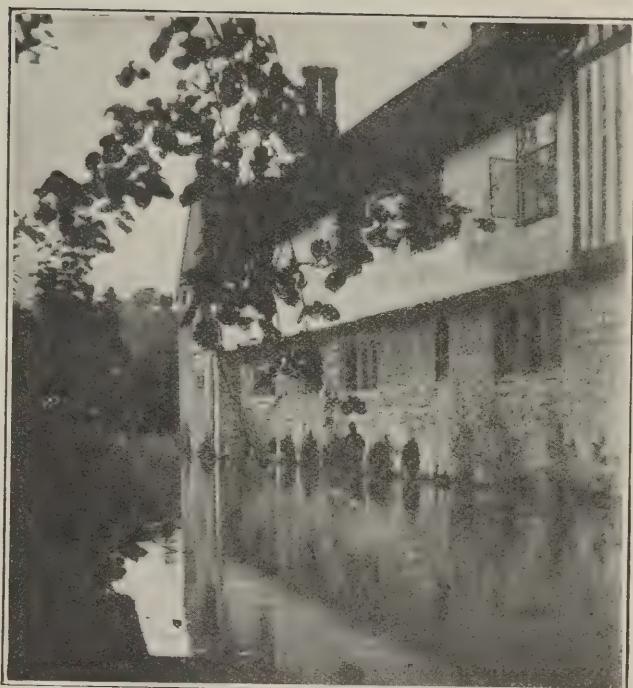


Photo: Charles A. Longley.

IGHTHAM MOTE, SEVENOAKS.

THE EARLY NINETEENTH-CENTURY
HOUSE.

AT the time of the Gothic Revival the whole range of Renaissance work was regarded askance, if not vehemently denounced as a bad model; and in our own day there have not been wanting writers—some of them very distinguished writers—who endeavour to persuade us that everything went to pieces in the architectural world at the end of the eighteenth century. We are told of the magnificent designs of Inigo Jones, who reached, at a bound, the highest level of English architecture: there is no question of his genius, and whether or not it be a quibble over his name or John Webb's being accurately set against certain designs, the merit of the work goes unchallenged. Then came Wren, not so great as his precursor, but with giant talents, and possessed of a wealth of invention which is not sufficiently recognised; and in his case, also, the eulogist has plenty of matter for his pen. The other men of the English Renaissance follow in turn, diminishing stars, but still emitting a bright light, and, after them, scores of smaller men until—so the story goes—we come to a dead stop as the Georges pass from the English throne.

In literature, after Chaucer, there were long years of obscurity, unilluminated by any writer of note, and we are accustomed to be told the same sort of thing when reference is made to the period of the late eighteenth century, and the early nineteenth. The mere mention indeed of the nineteenth century conjures up a vision of dullness worse than dead, or, in another of its phases, an amazing spectacle of incongruity and ugliness in every branch of design. We may note in passing that the nineteenth century exhibited in its middle period the greatest example of how not to do things concerning the design and decoration of houses. A positive genius was abroad for discovering such undesirables as fiery-looking pitch-pine and garish flock papers, wax flowers and Berlin wool footstools, and when we stand outside those Victorian houses and see their ponderous trappings, it makes one wonder how there ever could have been so great a perversion of taste. While, however, the middle period of the nineteenth century was so entirely bad, the fact has been largely overlooked that the first period boasts a great deal of merit. In fact, the houses of this period,

taken as a whole, display a far higher quality in architectural design than even the average houses of the present day.

At this time Chambers and his school had gone, and the revivalists were hard at work trying to catch the spirit of Greek architecture and apply it to the buildings of the day. About the houses of the early nineteenth century there was, admittedly, an absence of that pleasant warmth of aspect which makes the Georgian houses so attractive. They were more frigid, and there was a certain baldness about them which, to people accustomed to an over-abundance of ornament, still renders them of no account. But to those who have an eye for the true qualities of architecture these houses make a strong appeal. They display an ordered simplicity and a directness of expression which is at once captivating.

In the present issue are published half-a-dozen examples of early nineteenth century houses in Guernsey. It is curious to note that Guernsey offers an unbroken series of houses of this period, remaining practically in their original state. It would seem that when the Napoleonic wars had come at last to an end, and a new era of peace had followed, people began to settle very freely in Guernsey, and to build houses there. And so it happens that to-day one may walk in St. Peter Port through street after street of early nineteenth-century work. A hundred years ago St. Peter Port could have been nothing more than a fishing village, made up of a certain number of old houses, and possessing a town church with a history that goes back centuries. Then came the building era. The people were largely French, but the houses which so characterise St. Peter Port are English, and we may assume therefore that these houses were built for English people and designed by English architects. Some of them, though now absorbed in the town, originally stood isolated, and away from the road. Such was evidently the case with the house illustrated on this page, which now stands next the road that was made to commemorate the visit of Queen Victoria in the 'forties. The date of this house may be taken as 1814, as that date is cast on the pump in the courtyard. In its main lines it is typical of the early nineteenth century, but the porch is of a different character, exhibiting more of the feeling of eighteenth-century work, and thus it would seem to offer an example of how one period merges into another.

The house in Doyle Road shown opposite, has been added to in recent times, and has undergone some repair, but the chief features remain. The greatest interest centres in the balcony that extends across the garden front. The slender proportions of the twin columns

recall Colonial work, while the treatment of the balustrading is eloquent testimony to the good taste of the designer. In this connection we may note that delightful designs in ironwork were produced at the commencement of the nineteenth century. The predominant characteristic is a delicate grace of form. This is seen in the balustrading to the house in Doyle Road, here illustrated, and another example is afforded by the Lukis Museum in Grange Road, illustrated on page 190. The pattern



HOUSE ON THE QUEEN'S ROAD, GUERNSEY.

of the balustrading on this latter house is exactly the same as the writer has seen on houses in London and Oxford, and would seem therefore to have been the stock pattern of some trade firm. "Greek" Thomson and Donaldson gave time to this matter, and possibly in this same balustrading, seen in so many places, we may have the outcome of their labours. Would that such an excellent pattern could be seen more often in manufacturers' catalogues to-day.

These Guernsey houses are built of granite in random courses, and are generally plastered, but there are a certain number of examples where the granite has been left exposed, and the result is very pleasing. On reference to the Centre Plate in this issue a comparison may be made between two houses treated with and without the plaster face. The house on the Saumarez Road has, it will be noted, a delightful trellis porch, while the house on the Rohais Road displays in its pediments, and in the pilasters to the wings, a correct adherence to Classic motives.

As a further example we may turn to the houses in Doyle Road shown on the opposite page. This is an ordinary row of small houses built as economically as possible, but presenting nevertheless an appearance which is in great contrast to the rows of houses that are now being erected in the newer part of St. Peter Port. Each house is divided from its neighbour by a pilaster carrying a vase, and the introduction of sliding window shutters has been very happily arranged. There is nothing exceptional about these houses, but they are a good example of what could be done in the early nineteenth-century when a row of houses had to be built. They are quiet and satisfactory, with well-proportioned elements, and we should be glad if the average row of houses erected in England at the present time only presented half so satisfactory an appearance.

Within these houses of the early nineteenth century we find many features of interest, though the planning often does not conform to the necessary requirements of to-day. The hall is generally of a fair size, and has an arched opening framed in with a well-proportioned pilaster and architrave. The kitchen arrangements are not so well considered as they are at present, and there are other defects, but, taking them as a whole, these houses offer many points of interest to the modern architect, and there is a good deal to be learnt from them in the way of straightforward design.



Photos: Architects' and Builders' Journal.

DETAIL OF PORCH TO HOUSE ON THE QUEEN'S ROAD,
ST. PETER PORT, GUERNSEY.



House on the Rohais Road.



House on the Saumarez Road.

[Photo: "Architects and Builders' Journal,"

THE EARLY NINETEENTH CENTURY HOUSE: TWO EXAMPLES FROM GUERNSEY.



House in Doyle Road, St. Peter Port : Garden Front.



Houses in Doyle Road, St. Peter Port.

Photos : Architects' and Builders' Journal.

THE INCREASED COST OF BUILDING.

A REVIEW OF THE PAST CENTURY.

At a time when the increased cost of building (materials and labour) is very much under consideration, we have thought it opportune to present some trustworthy information on the subject. In the present article therefore will be found a general statement of the increase that has taken place during the last century, with practical data in the form of comparative tables; all of which should be of the greatest interest and value to everyone connected with the building trade.

THERE has been a good deal of rather vague comment recently upon the progressive increase in the cost of labour and materials in the building trade; but, so far as we are aware, no attempt has been made to determine the extent of the increase and the causes to which it is due. By a general review of the leading items and prices for different periods since 1776 we see that the cost of excavating has increased comparatively but little up to the present time, although the labour rates themselves have more than trebled during the same interval. This economy of cost has been largely influenced by the more systematic methods and improved appliances now generally employed, whilst for the huge excavations required in large and important engineering works a further saving is effected by the use of excavating machinery of various kinds.

Bricklayer's Work.

For bricklayer's work, the prime-cost of stock bricks delivered on a London site averaged about 20s. per thousand in 1776, 42s. in 1811, and at the present time may be taken at 40s. per thousand. At the beginning of last century all imported bricks and tiles were subject to duty, but in 1850 this tax was abolished. The labour rates for bricklayers have gradually increased from approximately 3d. per hour in 1776 to 5½d. or 6d. per hour in 1811, with a further steady increase up to 10½d. per hour at the present time; whilst the cost of ordinary stock brickwork in mortar has varied, on a rough average, from £8 per rod in 1776, £18 per rod in 1811, £13 in 1859, to £12 10s. per rod to-day. Portland cement, now so largely used on building and engineering works, is considerably cheaper than when first introduced, owing to keen competition and improved methods of manufacture. In 1843 the price of Portland cement averaged about 3s. 6d. per bushel, 3s. in 1852, 2s. in 1890; the rate at present being about 1s. 9d. per bushel.

Fir, Timber and Deals.

During the period under review the cost of fir timber has fluctuated very considerably. In 1776 fir timber was quoted at 2s. per ft. cube, including trade profit; in 1811 it had risen to 8s. per ft. cube; but in 1826 the average price had decreased to 4s. per ft. cube. Further reductions took place from time to time, so that in 1859 we find the retail price of fir timber to be about 2s. 9d. per ft. cube, the present price being about 2s. per ft. cube. The comparatively high prices paid for fir timber and deals during the early part of the last century were chiefly due to the heavy import duties then levied. These were on an elaborate and complicated scale. They were eventually consolidated in 1819, and from this period they gradually diminished until the year 1860, when the tax was reduced to an almost nominal rate. The timber duty was eventually

repealed in 1866, the tax being at that time 1s. per load of 50 cubic feet of hewn wood and 2s. per load on sawn timber. The extensive use of machinery for sawing timber, preparing floor-boards, planing, and similar preparatory work has considerably reduced the cost of a large quantity of the manufactured wood goods used in building, notwithstanding the great increase which has taken place in the rates of wages from time to time. Allowing for the comparative difference in the purchasing value of money, we find that on the whole the average cost of carpenter's and joiner's work is at the present time relatively less than a hundred years ago.

The Glass Tax.

Not only was glass expensive in itself, but a very heavy window tax was annually levied upon the occupants of the houses. For many years all glass imported to this country was subject to a heavy customs duty.

In 1827 the window tax amounted to 3s. 3d. for houses with six windows; £1 8s. for ten windows; £5 12s. 3d. for twenty windows; £17 5s. for fifty windows; £29 8s. 6d. for one hundred windows; £46 11s. 3d. for one hundred and eighty windows, and 1s. 6d. each for every window exceeding that number. In 1837 houses containing less than eight windows were exempt from the tax, but for dwellings containing a greater number of windows the duty remained as already mentioned for 1827.

Plumber's Work.

The cost of plumber's work generally is now considerably less than at the beginning of last century. This is chiefly due to decrease in cost of pig lead, and also to the improved methods of manu-

facturing sheet lead, pipes, bends, &c. Drawn lead pipes and bends as now made are both cheaper and better than the old form of soldered pipe-work. Similar improvements and reduction in cost are also seen in plumber's brass-work and sanitary appliances of every description.

The Cost of Labour.

On the labour side of the cost of building during the past hundred years we find that a considerable increase has taken place in the rates of wages paid to workmen in all branches of the building trade, and also that this upward movement has been especially marked during the latter half of the century. The following table shows approximately the average rates of wages at different dates in the London district. During the earlier part of the last century it was customary to calculate the wages of workmen at per day, instead of per hour, but for greater convenience of comparison the labour rates for the entire period under review have been reduced to the hour standard. The rates given for the last thirty years have been chiefly compiled from the reports of the standard time rates of wages which are issued annually by the Labour Department of the Board of Trade. These annual reports are based upon the returns furnished to the Board of Trade by the various labour and trade associations.

COMPARATIVE TABLE SHOWING THE AVERAGE RATES OF WAGES PER HOUR IN THE LONDON DISTRICT DURING THE PAST 112 YEARS.

Date.	Labourers.	Bricklayers.	Masons.	Carpenters or Joiners.	Plasterers.	Plumbers.	Painters.
1800	d. 3	d. 5	d. 5	d. 5	d. 5	d. 5	d. 4
1820	3½	6	6	6	6	6	5½
1840	3½	6	6	6	6	6	5½
1850	4	6½	6½	6½	6½	7	6
1860	4	7	7	7	7	8	6½
1870	4½	8	8	8	8	9	7½
1873	4½	8½	8½	8½	8½	9	7½
1875	5	9	9	9	8½	9½	7½
1882	5	9	9	9	9	10	7½
1888	5½	9	9	9	9	10	8
1894	6	9½	9½	9½	9½	10½	8½
1897	6½	10	10	10	10	10½	8½
1900	7	10½	10½	10½	11	11	8½
1904	7	10½	10½	10½	11	11	8½
1909	—	10½	10½	10½	11	11	—
1912	7	10½	10½	10½	11	11	8½
(Jan. 1st)							

Some Typical Examples.

The following table, which has been specially compiled, shows the variation in prices of eight standard building materials during the past twelve years. As will be seen, there has been in the majority of cases considerable fluctuation. While one or two of the instances given show a slight decrease in cost, some have remained practically stationary, but others have substantially increased.

August	Fir Timber: Dantzic or Memel per load of Soft.	Bricks: Hard Stocks per 1,000.	Ancaster Stone in Blocks per cube foot.	Portland Cement per ton.	Red Roofing Tiles per 1,000.	Bangor Slates 20 in. by 10 in. per 1,000.	R.S.J.'s Ordinary Section per ton.	English Sheet Glass in Crates, 15-oz. third per foot.
	£ s. d.	£ s. d.	s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	d.
1900	4 5 0	1 14 0	2 0	1 16 0	2 1 6	11 5 0	9 7 6	2½
1901	4 10 0	1 14 0	2 0	1 14 6	2 1 6	11 5 0	6 15 0	3
1902	4 10 0	1 13 0	1 11	1 11 0	2 1 6	12 0 0	6 5 0	2½
1903	4 10 0	1 15 6	1 11	1 10 0	2 2 0	13 2 6	6 5 0	2½
1904	4 10 0	1 16 0	1 11	1 10 0	2 2 0	13 2 6	6 5 0	2½
1905	4 10 0	1 8 0	1 11	1 7 0	2 2 0	13 2 6	6 0 0	2½
1906	4 10 0	1 10 0	1 10	1 7 0	2 2 0	13 2 6	7 0 0	2½
1907	4 10 0	1 7 0	1 10	1 8 0	2 2 0	13 2 6	7 7 6	2½
1908	4 10 0	1 8 0	1 10	1 8 0	2 2 0	13 2 6	7 0 0	2½
1909	4 10 0	1 6 6	1 10	1 8 0	2 2 0	13 2 6	7 0 0	2½
1910	5 0 0	1 10 0	1 10	1 8 0	2 2 0	13 2 6	7 0 0	2½
1911	5 0 0	1 13 0	1 10	1 9 0	2 2 0	13 2 6	7 0 0	2½
1912	5 0 0	1 14 0	1 10	1 14 0	2 2 0	13 2 6	7 10 0	2½

It will be seen that the greatest relative increase in the rates of wages has been secured by ordinary labourers or unskilled artisans. The current rate of wages for labourers is now double the amount ordinarily paid a hundred years ago. Of skilled workmen, the plasterers and plumbers have obtained the greatest increase in labour rates. During the first half of the century the rise in wages was gradual, but comparatively slight as compared with the increase obtained in the latter half. In 1850 the average wage for labourers was about 4d. per hour, but in 1875 their wages had increased by 25 per cent. to 5d. per hour; in 1894 a further advance of 20 per cent. had been obtained; whilst in 1900 the standard rate for labourers was 7d. per hour, or a total increase of 75 per cent. during the last fifty years of the nineteenth century.

Similarly, bricklayers, masons, and carpenters were receiving about 5d. per hour in 1800 and 6d. per hour in 1840, but in 1875 the average London rate was 9d. per hour, being an increase of 50 per cent. in thirty-five years, whilst in 1900 the rate of wages had advanced to 10½d. per hour, or a further increase of 17 per cent.

Higher Wages and Fewer Hours.

This general increase in the rates of wages has been further accompanied by a considerable decrease in the number of hours now constituting a working day. The ordinary working day formerly consisted of ten hours, or sixty hours per week; but in 1870 the working week was reduced to fifty-four hours, or nine hours per day. Since 1900 the recognised working week for the building trades in the London district may be taken to average forty-eight hours per week, or eight hours per day.

The rates of wages paid and hours of labour observed by the London County Council for the present year are the same as in 1904, except for some slight decrease in working hours during the winter in two or three trades. It will be noticed, however, that the wages for carpenters and joiners are this year to be increased from 10½d. to 11d. and further increased to 11½d. during 1913.

With regard to the labour rates current in the different provincial cities and towns, these vary considerably according to the district and local circumstances; but generally wages in all parts of the country are decidedly lower than those paid in London, where the cost of living, &c., is much higher. The same comparative improvement has, however, taken place in country districts. The following tables indicate the principal variations which have occurred in the more important building trades at the chief provincial cities and towns within recent years, the prices for the present year also being given:—

BRICKLAYERS' RATES OF WAGES. (Per hour.)

District.	1875.	1885.	1895.	1904.	1909.	1912. (Jan. 1st.)
Birmingham ...	6½	8	9	9½	9½	9½
Brighton ...	6	7	8	8½	—	8
Bristol ...	6	7	8	8½	—	9
Cardiff ...	7½	7½	8½	9	9	9
Leicester ...	7½	7½	8	9	9	9
Liverpool ...	7½	8	9	9½	10	10
Manchester ...	8½	8½	9½	10	10	10
Newcastle ...	8½	8½	9	10	9½	9½
Norwich ...	5	6	6½	8	8	8
Nottingham ...	7½	8	8½	9	9	9½
Portsmouth ...	6	7	8	8½	8½	8½
Wolverhampton ...	7	7½	8	9	9	9

MASONS' RATES OF WAGES. (Per hour.)

District.	1875.	1885.	1895.	1904.	1909.	1912. (Jan. 1st.)
Birmingham ...	8	8½	9	9½	10	10
Brighton ...	7½	8	8	9	—	8-9
Bristol ...	7½	7½	8	8½	—	9
Cardiff ...	7½	7½	8½	9	9	9
Leicester ...	8	8½	8½	9	9½	9
Liverpool ...	7½	8	9	9½	10	10
Manchester ...	8	8	9	9½	9½	9½
Newcastle ...	8	8	9	10	9½	9½
Norwich ...	6	6½	6½	8	8	8
Nottingham ...	7½	9	9	9½	9½	9½
Portsmouth ...	6½	7½	8	8½	8½	8½
Wolverhampton ...	7½	8	8½	9	9	9

CARPENTERS' AND JOINERS' RATES OF WAGES. (Per hour.)

District.	1875.	1885.	1895.	1904.	1909.	1912. (Jan. 1st.)
Birmingham ...	7½	8	9	9½	9½	9½
Brighton ...	6½	7½	8	8½	—	8
Bristol ...	7	7	8	8½	—	9
Cardiff ...	7½	7½	8½	9	9	9
Leicester ...	7	7½	8	9	9	9
Liverpool ...	7½	7½	8½	9½	10	10
Manchester ...	8	8	8½	9½	9½	9½
Newcastle ...	8	8	9	10	9½	9½
Norwich ...	5½	6½	7	7½	8	8
Nottingham ...	7½	8½	8½	9	9	9½
Portsmouth ...	6	6½	7	8	8	8
Wolverhampton ...	7	7½	8	8½	9	9

PLUMBERS' RATES OF WAGES. (Per hour.)

District.	1875.	1885.	1895.	1904.	1909.	1912. (Jan. 1st.)
Birmingham ...	8	8½	9	9½	9½	9½
Brighton ...	6½	7½	8	8½	—	8
Bristol ...	7	8	8	8½	—	9
Cardiff ...	7	7	8½	8½	9	9
Leicester ...	6½	8	8	9	9	9
Liverpool ...	7½	8	9	9½	9½	9½
Manchester ...	7½	8	8½	9½	9½	9½
Newcastle ...	7½	8½	8½	9½	9	9
Norwich ...	6	6	6½	8	8	8
Nottingham ...	7½	8½	8½	9	9	9½
Portsmouth ...	6	6½	7	8½	7½	7½-8
Wolverhampton ...	7	7½	8½	9	9	9

PLASTERERS' RATES OF WAGES. (Per hour.)

District.	1885.	1890.	1895.	1904.	1909.	1912. (Jan. 1st.)
Birmingham ...	8	8½	9	9½	10	10
Brighton ...	7	7½	8	8½	—	8½
Bristol ...	7	7½	8	9	—	9
Cardiff ...	7½	8	8½	9	9	9
Leicester ...	7½	7½	9	10	10	10
Liverpool ...	8	8	9	9½	9½	9½
Manchester ...	8	8	8½	10	10	10
Newcastle ...	7½	8½	9	10	9½	9½
Norwich ...	6	6	6½	8	8	8
Nottingham ...	8½	9	9	10	10	10
Portsmouth ...	7	7	7½	8½	8½	8½
Wolverhampton ...	7½	8	8	9	—	8½

PAINTERS' RATES OF WAGES. (Per hour.)

District.	1885.	1890.	1895.	1904.	1909.	1912. (Jan. 1st.)
Birmingham ...	7	7½	7½	8	—	8½
Brighton ...	6	6	6½	7	—	7
Bristol ...	6½	7	7½	8	—	8½
Cardiff ...	6½	7	7½	7½	8	8
Leicester ...	7	7	7½	8	—	8
Liverpool ...	7	7	8	8½	8½	8½
Manchester ...	7	7	7½	8½	9	9
Newcastle ...	7	7½	7½	8½	8½	8½
Norwich ...	4½	5	5	6	6½	6½
Nottingham ...	7	7½	8	8½	8½	8½
Portsmouth ...	5½	5½	6	7	6½	6½
Wolverhampton ...	6½	7	7½	8	7½	7½

As a rule, the rates of wages in the provinces are generally lower in those country towns which are centres of agricultural districts—such as Norwich, Exeter, or Hereford—than in the large and busy manufacturing cities of Manchester, Birmingham, Newcastle, and the like. There are, however, certain advantages in the matter of cheaper living in the country towns which compensate to some extent for the lower rates of wages. During the past sixty years there has

LONDON COUNTY COUNCIL RATES OF WAGES, 1912.

TRADES.	Rate of pay per hour	Hours of labour per week.	
		Summer.	Winter.
BUILDING TRADES—	d.	Thirteen weeks after second Monday in November.	
Carpenters ...	10½*		
Joiners ...	10½		
Bricklayers ...	10½		
Bricklayers (cutting and setting gauged work) ...	11½		
Masons ...	10½		
Masons (fixing) ...	11½		
Masons (granite work) ...	11½		
Smiths, fitters, gas-fitters, etc., ...	9 to 10	First 10 weeks. Last 3 weeks.	
Plasterers ...	11		
Plumbers ...	11	41½	
Plumbers' mates...	7		
		Twelve weeks after second Monday in November.	
		Three weeks at beginning and three weeks at end of period.	Six middle weeks.
Painters and glaziers ...	8½†	50	47
Timbermen ...	7½ to 8	50	47
Scaffolders ...	7½	50	47
Labourers and navvies ...	7	50	44

* To be increased on and after the first Saturday in September, 1912, to 11d., and to be further increased on and after the first Saturday in March, 1913, to 11½d. per hour.

† Painters, when employed on ship painting in the Port of London, are to be paid at the rate of 9d. per hour.

been an increase in wages of about 70 per cent., while the present rates compared with those current nearly forty years ago show an advance of 25 per cent. An increase of over 10 per cent. has occurred during the past eighteen years, and latterly there have been some important changes, as will be seen by the comparative tables. The following tables show the effect of changes in rates of wages on total weekly wages, and also the number of workpeople whose rates of wages were changed during each of the ten years 1901-1910, together with the total net amount of such changes per week.

EFFECT OF CHANGES IN RATES OF WAGES.

Year.	Number of Changes.	Number of Workpeople.		Total Net Amount of Changes.	
		Gross Aggregate Number.*	Number of separate individuals.	Increase.	Decrease.

BUILDING TRADES. Bricklayers.

			£	£
1901	21	18,752	18,752	1,632
1902	15	2,186	2,186	202
1903	5	334	334	30
1904	6	3,000	3,000	208
1905	5	1,642	1,642	154
1906	3	165	165	20
1907	4	1,995	1,995	49
1908	3	206	206	13
1909	8	3,249	3,249	211
1910	4	1,413	1,413	144

* Counting individuals as often as their wages were changed.

Year.	Number of Changes.	Number of Workpeople.		Total Net Amount of Changes.	
		Gross Aggregate Number.*	Number of separate individuals.	Increase.	Decrease.
Masons.					
1901	27	8,091	8,091	...	529
1902	14	5,523	5,523	366	...
1903	4	1,617	1,617	16	...
1904	11	5,364	5,364	...	529
1905	9	1,154	1,154	...	111
1906	8	254	254	...	6
1907	1	34	34	4	...
1908	5	1,065	1,065	23	...
1909	4	1,840	1,840	...	154
1910	3	510	510	31	...

Carpenters and Joiners.					
1901	25	4,239	3,979	258	...
1902	8	2,489	2,489	...	92
1903	5	435	435	46	...
1904	7	1,364	1,364	...	16
1905	4	5,274	5,274	...	572
1906	5	724	724	46	...
1907	7	3,609	3,609	45	...
1908	10	7,840	7,840	...	60
1909	8	4,022	4,022	...	308
1910	9	2,051	2,051	152	...

Slaters.					
1901	7	140	140	6	...
1902	2	54	54	5	...
1903	1	10	10	1	...
1904	...	...	...	...	3
1905	1	25	25	...	44
1906	2	417	417	...	1
1907	1	15	15	4	...
1908	2	43	43	...	63
1909	8	592	592	...	5
1910	3	75	75	...	...

Plumbers.					
1901	16	937	867	86	...
1902	6	152	152	18	...
1903	4	143	143	†	...
1904	5	125	125	14	...
1905	2	996	996	...	100
1906	2	158	158	3	...
1907	4	534	534	12	...
1908	6	455	455	22	...
1909	3	319	319	16	...
1910	2	121	120	13	...

Plasterers.					
1901	13	1,570	1,570	...	134
1902	9	1,074	978	75	...
1903	2	250	250	...	32
1904	2	121	121	...	5
1905	2	98	98	...	9
1906	2	420	420	...	47
1907	1	18	18	...	2
1908	1	55	55	5	...
1909	2	610	610	...	51
1910	1	30	30	3	...

Painters and Decorators.					
1901	36	4,128	4,078	418	...
1902	11	2,705	2,705	194	...
1903	9	1,423	1,173	44	...
1904	3	230	230	2	...
1905	5	207	207	19	...
1906	3	1,111	1,111	...	90
1907	5	3,723	3,723	123	...
1908	11	2,317	2,517	197	...
1909	9	808	808	32	...
1910	7	511	511	38	...

Builders' Labourers.					
1901	12	2,183	2,183	202	...
1902	6	1,358	1,358	131	...
1903	6	676	676	52	...
1904	3	625	625	...	42
1905	3	2,342	2,342	...	108
1906	1	16	16	1	...
1907	...	...	...	...	...
1908	1	220	220	22	...
1909	2	650	650	26	...
1910	1	260	260	1	...

* Counting individuals as often as their wages were changed.
† Under £1.

The rates of wages were increased during July, 1912, in a number of large towns as follows :—Bradford and District (plasterers) from 8½d. to 9d.; Liverpool (plumbers) from 9¼d. to 10d.; Aberdeen (carpenters and joiners) from 8d. to 8½d.; Glasgow (joiners) from 9½d. to 10d.

From January to July, 1912, the number of people affected by changes in wages was 43,398, the increase being £3,902. The figures for the same period during 1911 were as follows:—Changes, 8,762; increase, £794. It will be seen, therefore, that a considerable advance all round has taken place during the present year.

AN INTERESTING REPUBLICATION.

The essay on architecture by John Shute, published in 1563, has been re-issued in a fac-simile edition, with an introduction by Mr. Lawrence Weaver.* Shute is believed to have been a member of the "Worshipful Company of Painter-

* The First and chief groundes of Architecture. By John Shute, Paynter and Archytecte. (First printed in 1563.) London: Country Life, Ltd.; 1912. 15/-.

Stainers"; and the Duke of Northumberland, in whose service he had been some capacity, sent him to Italy and maintained him there for some time, "to confer with the doings of the skilful maister in architectur, and also to view such ancient monumentes hereof as are yet extant." This treatise was evidently the result of his studies in Italy.

The book is reproduced in a fac-simile of the original italic type, with its curious spelling and abbreviations. It has one of the decorative title-pages in fashion at the time, and large drawings of the Five Orders, the supposed character of each of them being symbolised by a fanciful figure which occupies the opposite side of the plate to the drawing of the column; the Tuscan and Doric being symbolised by male figures; the Ionic, Corinthian, and Composite by female figures. The book is, of course, of no practical value at the present day, though at the time of its publication it probably did something to stimulate the study of classical architecture; but it is a very curious relic, and as original copies of it are scarce it is worth while to reproduce it.



Photo: Architects' and Builders' Journal.
EARLY-NINETEENTH-CENTURY HOUSE (NOW THE LUKIS MUSEUM),
GRANGE ROAD, ST. PETER PORT, GUERNSEY.

AN INDICTMENT OF THE "LOGE" SYSTEM.

THE system of instruction given at the Ecole des Beaux Arts having come to be regarded as something in the nature of an ideal, and having already been largely adopted by the Beaux Arts Society in America, it is something of a shock to read what is apparently a serious indictment of certain features of the system, made by members of the American Institute of Architects. A volume containing the proceedings of the forty-fifth Annual Convention of the Institute, held in the latter part of last year, has just come to hand; and it appears that the discussion with respect to the Beaux Arts training arose out of Mr. Cram's report on behalf of the Committee of Education. Mr. Marshall, a member attending at the Convention, explained that he first had an idea that something was wrong by reason of the very low average of ability shown in connection with an examination instituted by the Art Commission of New York. He believed that boys were led to think they were getting an education when they were not. He was particularly interested in one of the competitors, and, having a conversation with him one day, elicited the information that he was working in his spare time on a problem in one of the ateliers of the Beaux Arts Society. He (Mr. Marshall) was shown a sketch of a plan and a sketch of an elevation, which had been in course of preparation for months, and a more inferior design in every respect he confessed never to have seen. The speaker summarised his chief objection to the Beaux Arts system in the statement that they were too liable to assume that the methods which were good for men who knew something were good for those who knew nothing. Boys were allowed to come into the ateliers and to undertake work after the method which was claimed to be good for men who were well and thoroughly educated. Mr. Marshall said: "Now, I am not only willing, but I am delighted, to say I believe very thoroughly in the work that is being done by the Beaux Arts Society. But I am doubtful as to the value of the method which has been forced upon us by the necessities of examination, that is, a system of giving a man a few months, so to speak, *en loge*, and then giving him a long time to work up that project he then decides upon. I am perfectly willing to grant that that is a splendid way of examining a man who is thoroughly well educated, to find out just how much he knows, because he can tell you what he knows in that way very quickly. But we are not considering now the value of methods from the pedagogical standpoint—we are considering values from the man himself. I am convinced that no great work of art is ever produced as the result of making a sharp decision and then working for a great many years or months in the perfecting of that sketch or whatever it is, whether it is a piece of sculpture or a piece of architecture. I believe that the only great art work we shall ever have will come as a result of long thought with very rapid work at the end. Now this whole *en loge* system seems to me to be very bad for true art. It makes a smart draughtsman; it makes a successful business man; but does it give to a man the habit of mind which is going to make him a great artist? I know of no great art work which has resulted from deciding in a day or two what you are going to do and then spending three months doing it. Usually great art work comes

from spending many, many years in deciding what you are going to do, and then doing it."

A Repudiation.

The challenge thus thrown out was accepted by Mr. James Otis Post, who said (as chairman of the Committee on Education of the Society of Beaux Arts Architects) he could state positively that if the student studying the Beaux Arts problems in his office had handed in his inferior plans and elevation he would have failed to receive a "mention," which would have shown him he was not as good an architect as he thought, and after several experiences of that sort he would have realised that it was time for him to study design, and not merely clever draughtsmanship. After studying architectural compositions in plan and elevation, he might then in nine hours indicate a sketch, the essential of which would be capable of good development during six weeks' study in the preparation of his final drawing.

"The aim of the educational work of our society," said Mr. Post, "is to encourage the study of architecture and to produce good designers. We have not and do not propose to establish a complete course of architecture, nor do we consider our students holding certificates qualified to practise architecture without other qualifications. We merely give annually a series of competitive exercises in design, for which programmes are issued to registered students by our representatives. In many instances, our students enter schools of architecture as a result of the stimulus derived from entering our competitions. The S.B.A.A. competitions are divided into three grades: First, the Elementary or Order Problems of Class 'B'; second, the simple Plan Problems and supplementary nine-hour Sketch Problems, of Class 'B'; and, third, the problems in Advance Design and supplementary Sketch Problems of Class 'A.' All our students with but few exceptions are required to pass through the three grades, and it is a matter of three or four years' study and hard work to qualify for our certificate. Generally speaking, the students of high standing in Class 'A,' especially those who have received a medal or two, are considered in the office in which they work to be first rate designers, and receive a much larger salary than if they had not had the experience gained in the Beaux Arts competitions."

What the Beaux Arts Society is doing.

The discussion was carried on by Mr. Lubschez, who said: "The point first made is that some methods are good for those who know something and not good for others who don't know. That is the strongest point of the whole argument. The *en loge* system of the Beaux Arts Society is unquestionably made for those having some fundamental knowledge, having something in mind to draw on for making *en loge* sketches. The programmes come out—especially to beginners in the West, to students who are struggling along and trying to educate themselves—and require them to make a nine-hour study of something which they know nothing about. They have no information to draw on, and I think it is a great injustice and harm to those students to be compelled or asked to make a sketch without having the privilege of consulting a library or actual examples, or similar examples, as every architect has

when he makes his preliminary studies for a commission. For instance, I remember one programme issued by the Beaux Arts Society some years ago, calling for the interior design of a great hall, and referring for precedent to a gallery in the Louvre. I believe that a great many, perhaps a majority, of those students in the West who received that programme were almost entirely unfamiliar with that gallery in the Louvre, and perhaps had never seen a picture of it. Now, I believe if that programme were issued to those students with the privilege of research, they might look up that gallery in the Louvre and study it and then prepare their sketch, perhaps prepare it then *en loge*. The students would have gained a great benefit by simply that further study which they would have been induced to make by the programme. I think, after that, that the method is all right, and that they should stick reasonably close to their preliminary study. But I think they should be given a chance for research before they make that preliminary study; that is, those students that know nothing—those students Mr. Marshall spoke about. I believe for the beginners in Class 'B' in the Beaux Arts Society work that the methods are entirely wrong. I do not believe they apply to these students at all. I have had a great deal of personal experience of my own with those programmes and some others. I think one example brought out before might be offered here again—the lighthouse programme. Those programmes were sent all over the country and, of course, reached interior towns as well as coast cities. None of the students in Kansas City who received that lighthouse programme I believe had ever seen a lighthouse. They knew what it was, doubtless, but they had never seen one; didn't know the requirements. The programme called for a lighthouse on a rock."

Mr. Otis Post: "They never had seen a rock."

Mr. Lubschez: "The nearest they had ever come to seeing a rock was a boulder, perhaps, in a field. I think it is pretty hard for a young fellow—and he becomes discouraged when he gets a thing like that—to require him to do something in nine hours which he knows nothing about; it is analogous to requiring a man to write a letter when he has available about five letters of the alphabet and knows no more. I believe the method is entirely wrong. I believe the Beaux Arts Society can do great work, with those beginners, but it is not getting at it in the right way."

In answer to this further indictment, Mr. Post explained that all they were trying to do was simply to introduce in America the method of instruction of the Ecole des Beaux Arts. "Our regulations," he said, "are framed as nearly as possible like those of the Ecole des Beaux Arts. If a man doesn't know orders of architecture and cannot execute the order problem, he isn't qualified to enter Class 'B.' We certainly teach those we are supposed to teach. Our idea is to instruct men in offices who can draw and are familiar with orders of architecture, but do not know how to assemble them in the art of design."

Sketches.

Another speaker, Mr. Van Pelt, said that the reason why sketches were originally introduced in America years ago was merely from the way that work was done in Paris. "The reason why we continue it so much in America," he said, "is because in the schools it is very difficult to ensure the fact that the student is going to work out his own ideas in a problem, and not the ideas of the friend at

his elbow or the man who is giving instruction. Secondly, it is a fact if a man doesn't crystallise his idea, and he is given a reasonable time to do that, he takes two or three weeks or months, all the time he is allowed to study the problem, in dancing around from one day to another day; he thinks it won't do, it has got to be given another day's thought. The result is he never perfects anything. That is true of the majority of students."

Professor Mann pointed out that one of the great virtues of the system was that it stimulated enthusiasm and led men to do work that was of inestimable value to them, and that otherwise would not have been done. "Now, in my observation," said the speaker, "the danger of the work has been that students entered it with the idea that it is a system of education, and they go on contentedly with the thought that they are being educated as architects, and wake up, perhaps all too late, possibly when they are trying examinations of some sort, and find deficiencies in their education. It has occurred to me more than once that the Beaux Arts Society might, instead of requiring merely a certain number of values for passing from Class 'B' to Class 'A,' require at that point, as I believe they do at the Ecole de Beaux Arts, certain other things, like construction and history and so on; and if they should do that at that point, it would bring the men up to a realisation that they have got to do something else besides go into these design competitions, which in themselves are certainly very excellent things."

Draughtsmen, but not Artists.

Returning to the charge, Mr. Marshall said: "The real point I wanted to make is that this method does produce good draughtsmen. It produces the kind of draughtsmen we want to employ, for we don't want a draughtsman to come into the office and fiddle around with a problem; we want him to start to work. But that is not the way high art is going to be done. The point I wish to make is—one cannot do anything really valuable in this world without thoroughly assimilating a problem, and if we assimilate a wrong thing by constantly paying attention to a thing very wrong or very bad, we actually warp and dwarf mental development. That is what happens if we take a bad plan and work over it two or three months. Of course, the system itself isn't anything new. We got it straight from Paris. The proposition to educate an architect is not quite a hundred years old; if even a hundred years old it would be perfectly preposterous to think that human beings in that hundred years could devise a perfect method of educating an architect. The devising of an effective method for the education of people in relation to language has taken thousands and thousands of years. Why should we assume that the method devised to meet the special conditions in Paris should necessarily be the perfect method for us? Why, it seems to me to be absurd on the face of it. I am not saying it is not, but that we ought to be prepared to think it is not likely to be perfect. There may be some fault in that method, and the fault in that method that I see is the tendency to produce splendid draughtsmen, clever business men, and to kill the artists."

After some further discussion, the whole question was neatly summarised by Dr. Lorch, who said: "It seems to me the essential thing in Mr. Marshall's suggestion was this: that most of these men who took this examination had not had enough mental training to give them that

power of analysis which belongs to the educated man. A lot of these boys come to think they are educated men, when, as a matter of fact, they are merely draughtsmen. It seems to me that is the situation we have got to face. We cannot afford, the Institute cannot afford, and no educated body of men can afford, to stand for a one-sided training in architecture. That is what I think they get. A man has got to be something more than a draughtsman; he has got to be able to carry a problem through from beginning to end and see the completed result when he starts in. Your wealth of rough material needs coaching, and needs a great deal of special preparation and very hard study, and perhaps the schools will take its place; I have no fault to find with that. What I insist on is it has got to be put before the young men of the country that they need a broad education as well as specific training for the practice of architecture." From the above summary of a somewhat lengthy discussion, it will be seen that there is at least one vital defect in the Beaux Arts training as put into practice in America; and the result will probably be a considerable modification of the *loge* system.

MILLBANK AND THE NEW EMBANKMENT.

Steady progress is being made with the extension of the Embankment between the Houses of Parliament and Lambeth Bridge. The scheme is more than a garden extension; it means the practical reconstruction of the whole of Millbank from its junction with Abingdon Street to the point at which it merges into Grosvenor Road. The new scheme may be said to consist of two portions. On the one hand, Millbank has become what is to all intents and purposes a new thoroughfare. The roadway has been relaid, new footways have been constructed on a somewhat higher level, all of them leading up by a spacious way to the end of Lambeth Bridge; and they will, in course of time, form an excellent approach when the present bridge is replaced by something better. For two years now Lambeth Bridge has been closed to vehicular traffic, and in the course of the next two or three years it is hoped a new bridge will be in position. The new Millbank will also, as has been said, lead straight on to Grosvenor Road, and by that means it will have the effect of rescuing the Tate Gallery from the topographical obscurity in which it at present exists. Certainly it would appear to be the least accessible of all picture galleries in London, and many thousands of visitors to the metropolis may be expected to welcome the day when it will be brought within easier reach.

The other part of the scheme to which allusion has been made is the reclamation of the foreshore of the river between the Victoria Tower Gardens and Lambeth Bridge. The river wall, which is practically a continuation of the frontage of the Terrace of the House of Commons and that of the Victoria Tower Gardens, is being completed. A width of 50 ft. of the foreshore is thus added to the land, and the purpose of the scheme is to incorporate that strip in the Victoria Tower Gardens, so that they will run the entire distance from the end of the Terrace to Lambeth Bridge. An important feature to be set up in the Gardens will be Rodin's bronze group, "The Burghers of Calais"—not a copy of the Calais work, but an original finished by M. Rodin himself.

SOME FACTS ABOUT FRESCO PAINTING.

In the second of his Cantor lectures at the Royal Society of Arts on "The Materials and Methods of Decorative Painting," Mr. Noel Heaton, B.Sc., F.C.S., had many interesting things to say about fresco painting.

The Roman craftsmen, he pointed out, mixed their lime-putty with a considerable proportion of coarsely-powdered marble or similar material, varying in nature according to the resources of the district in which the work was executed.

This practice was continued by the mediæval fresco painters, as we learn from practical examination and from the various treatises on the craft, notably that of Cennino Cennini, whose methods have formed the model on which such examples of fresco as have been produced in modern times have been based.

Briefly stated, the method adopted is as follows: The wall is first "rendered" with a coarse rubble plaster composed of lime and pounded brick or pottery. The intermediate plaster (or *Arricciato*, as it was called by the Italian workers), composed of lime-putty and sand, is laid on this as soon as the initial setting has taken place, three or four coats of this being frequently applied. The wall is thus brought to a dead smooth surface to receive the final thin coating of fine plaster or *intonaco* of which the painting is executed. This last coat is composed of lime-putty and finely powdered white marble, and is, as a rule, little more than $\frac{1}{8}$ in. thick. With such a thin coating the process of initial setting is comparatively rapid, and in order to secure thorough incorporation of the pigments with the ground it is necessary that they shall be applied within a few hours of laying the *intonaco*. This necessitates laying the *intonaco* in sections, only a much being put on as can be painted in one day, this amount varying of course with the intricacy of the portion to be painted; in the finished work the line of junction between each successive day's work can often be clearly seen on close examination.

Very little has been done in modern times towards investigating the possibilities of improvement in the plaster used for fresco work, and the use of such material as asbestine, or finely-powdered asbestos in replacement of marble dust. There is in fact, a wide field of research open in the direction of modifying the composition of the plaster with a view to making it more easy to work with, and more especially with a view to making it more resistant to decay. Modern workers in fresco, as a rule, follow doggedly the directions given by Cennino Cennini, and endeavour to reproduce the tradition of mediæval Italy, without any attempt to enlist the resources of modern science on their behalf.

It is a great mistake to suppose, as many do, that the natural climate of this country is destructive to fresco painting. Unfortunately one must at the same time admit that the atmosphere of our modern towns in its present condition is extremely injurious to such work, for fresco has an extremely weak point—it is affected by the slightest trace of acid. This fact will be readily appreciated if you bear in mind the readiness with which the carbonic acid is removed from its combination with the lime, owing to its gaseous nature; removal that is accomplished not only by heating, but by the action of any acid that is stronger than carbonic acid; such a substance, for example, as sulphuric acid



BUSINESS PREMISES, NO. 75, BARRY STREET, KINGSTON, JAMAICA. H. FULLER-CLARK, ARCHITECT.

which decomposes carbonate of lime rapidly, driving off the carbon dioxide and combining with the lime to form gypsum. When this action takes place on the surface of a fresco painting decay inevitably results, because not only is the binding between the particles of pigment destroyed, but the whole substance of the plaster is gradually disintegrated. Now the atmosphere of our modern towns is heavily charged with sulphuric acid as a result of the continual combustion of coal. It will be well understood, therefore, that apart from the concomitant evil of smoke, which rapidly covers a porous surface like fresco with grime and obscures its beauty, the effect of this contamination of the atmosphere is disastrous, and renders some protective after-treatment an imperative necessity, if durability is to be secured. The difficulty is to find any method of treatment which will effectually protect the surface from the action of the acid whilst preserving the inimitable quality of the painting, which is destroyed by any treatment such as sizing or varnishing, apart from the fact that these prove very inefficient for the purpose. Fortunately we have one method of preservation which to a large extent combines the maximum of protection with the minimum effect on the quality of the surface, and that is the encaustic process introduced by Sir Arthur Church in connection with the restoration of the frescoes in the Houses of Parliament. The treatment is carried out by covering the surface with a mixture of one part of hard paraffin wax with four parts of toluol, in the form of a kind of paste or ointment, and afterwards, when the volatile toluol has evaporated, driving in the residual paraffin by means of heat.

This treatment, however, is but a palliative; it inevitably entails some disadvantage, and under normal conditions fresco is better without it.

We may ask, then, whether it is not possible to modify the composition of the plaster in fresco painting, so as to retain the comparative simplicity of producing

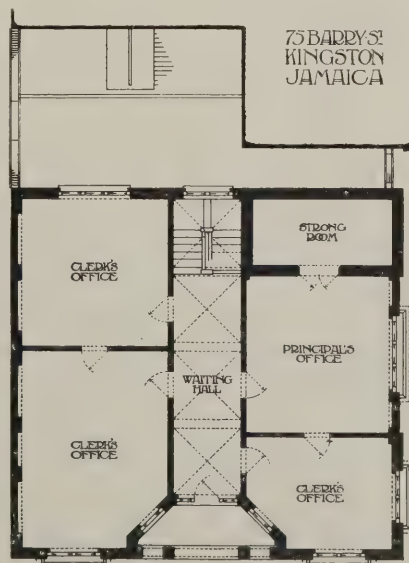
the finished painting in one operation, without the necessity of subsequent spraying, whilst at the same time obviating the dangers inherent to carbonate of lime plaster. If one could obtain, for example, a brilliant white plaster with a composition resembling that of a slow-setting Portland cement, the difficulty would be solved; but this is not possible in the present state of our knowledge. There are, however, very great possibilities in the use of a cement of an entirely different description, depending on a curious reaction that takes place when oxide of zinc is mixed with a solution of chloride of zinc. If these two substances are mixed in the right proportions, they combine together slowly to form a substance known as zinc oxychloride, the composition being intermediate between the two, and in so doing

set into a hard mass, thus forming a durable cement, which is largely utilised for many industrial purposes. Such a cement is not decomposed by sulphuric acid like carbonate of lime plaster, for the reason that it is a compound of an acid equal to it in strength.

There seems no reason why a process of painting which would bring fresco into line with modern requirements should not be based on this reaction, if only the opportunity for the necessary systematic investigation were forthcoming.

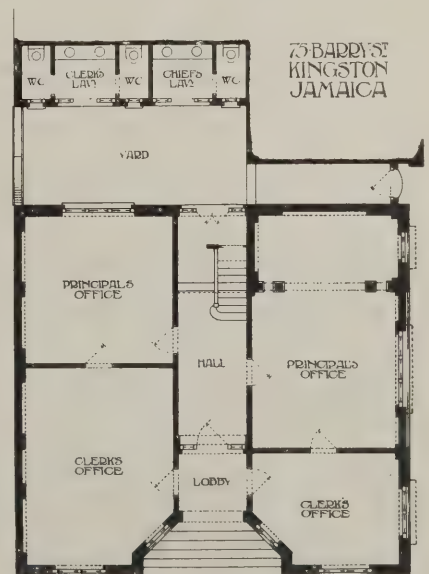
HOUSES IN JAMAICA.

On this page and the next are shown two buildings in Jamaica recently erected by native (black) labour under the super-



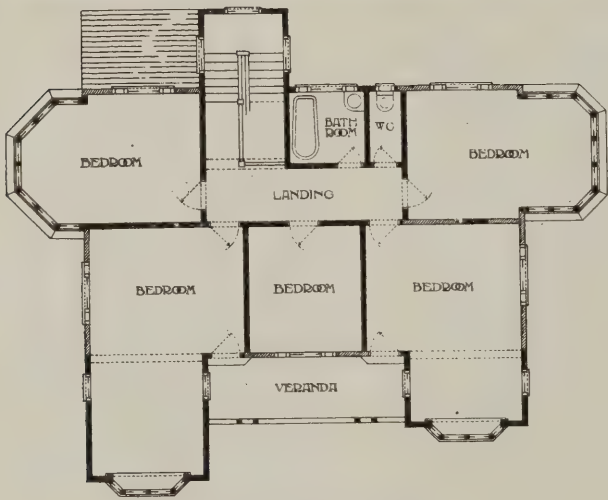
PLAN OF FIRST FLOOR.

SCALE OF 0 10 20 30 37 FEET



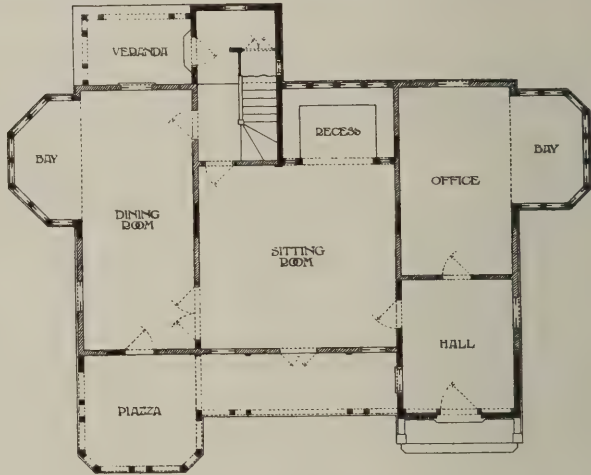
PLAN OF GROUND FLOOR.

SCALE OF 0 10 20 30 37 FEET



PLAN OF FIRST FLOOR.

SCALE OF 1" = 10' 0" 20' 30' FEET



PLAN OF GROUND FLOOR.

SCALE OF 1" = 10' 0" 20' 30' FEET

"KILDARE," ST. ANDREW, JAMAICA. H. FULLER-CLARK, ARCHITECT.

vision of Mr. H. Fuller-Clark, architect, of London, W.C.

Previous to its remodelling, "Kildare," St. Andrew, was known as "Dilcouscha" (the Garden of Delight), and contained dining and sitting-rooms and three bedrooms, the kitchen and servants' quarters being detached, as customary in Jamaica. The exposed timbers are treated with brown "Solignum," the cement is coloured with Hall's distemper of a buff tint, and the joinery is painted white.

No. 75, Barry Street, Kingston, is occupied as three suites of offices, the upper floor being the Jamaican home of the Gresham Life Office of London. The main walls are of reinforced brickwork, with local red brick facings, the cement bands having been introduced to disguise the "belt courses" required by the Building Authority. The cement is a cream tint and the joinery work is painted white.

LETCWORTH'S NEW RESERVOIR

There could be no better proof of the success of the Letchworth Garden City than the fact that it has been found necessary to supplement the water supply by sinking another borehole 210 ft. deep and constructing an additional reservoir. About eight years ago, when Mr. Ebenezer Howard's ideals first began to assume shape, a borehole 215 ft. deep was sunk in the chalk close to the Baldock Road, and about midway between Letchworth and Baldock. A good supply of water being found, a pumping plant was installed, and a covered-in storage reservoir of 250,000 gallons capacity was constructed about a mile from the borehole, on Weston Hill, which is 463 ft. above sea level, and more than 100 ft. above the level of the pumping station. About five years ago another borehole of similar depth was sunk, and the united supply proving in-

adequate to meet the requirements of the rapid expansion of the town, it was decided in the autumn of 1911 to undertake the present extension. The new reservoir which holds 500,000 gallons, is 105 ft. long, 87 ft. wide, and 16 ft. 2 in. deep. It is excavated out of the solid chalk, between 6,000 and 7,000 tons of that material having been displaced in its construction. The sides, ends, and floor are of concrete. The roof is also of concrete reinforced with rolled steel joists, supported by transverse brick walls, which are carried on arches 6 ft. wide. The reservoir was designed by Mr. A. W. Bullmore, A.M.I.C.E., engineer to the First Garden City, Ltd., and the work was carried out under his personal supervision. The contractor was Mr. C. Ball, Letchworth. The total cost was about £3,000. The sinking of the borehole has been carried out by Messrs. Grand and Sutcliff, and an abundant supply of water has been found.

TRUTH AND UNTRUTH IN
ARCHITECTURE.*

BY JOHN BEVERLEY ROBINSON

(Professor in Charge of the School of Architecture,
Washington University).

A generation ago Ruskin, in the "Seven Lamps of Architecture," laid down the principle that truth should be observed in all good architecture, but he found difficulty in drawing the line between reprehensible and excusable architectural falsehood. Nevertheless, the idea of truth as a principle in architecture still survives, somewhat expanded into the idea of "sincerity," the belief that not only should the structure and decoration of a building be what they seem to be, but that both structure and decoration should express the purpose for which the building is used, and the functions of its various parts. Thus a dome should not be placed on top of a building that has no great central hall within, to which the dome serves as covering and of which it is the æsthetic indication. In brief, the exterior should be the natural, almost necessary, outgrowth of the interior, as the interior is the outgrowth of the uses to which the building is to be put; and the parts of the structure in detail should have a structural, as well as an æsthetic, function to fulfil. All of which is true enough, with some reservations.

Besides the utilitarian aspect of architecture, in which the essential requirement is that a building must serve its purpose, from an æsthetic point of view there are two considerations: first, it must be pleasing to the eye; and second, it must not offend the judgment. Both of these are variable quantities. It is notorious that we like what we are accustomed to see; and moreover, the judgment of the engineer and that of the untaught layman would differ as to the adequacy of a steel truss to support the roof of a railroad station.

Deception by Means of Paint.

The most complete architectural untruth is obtained by means of paint. Whether the paint is used to imitate the grain of wood or the veining of marble, the imitation can be so perfectly done that the eye cannot detect it. As long as it remains undiscovered no great harm is done, but once found out there is no doubt a revulsion of feeling in the spectator that goes far to neutralise any pleasure that may at first have been felt.

In some Italian churches the columns are of coloured marble as high up as they are likely to be damaged; above that point they are of plaster, painted to imitate the marble so cleverly that the line of junction of the two materials can be distinguished only by the touch, the cold "feel" of the marble at once identifying it, not at all by the eye. There is no doubt that as soon as this fact is discovered the impression is received that all Italian Renaissance church interiors are scenic decorations, pretty enough, perhaps, but evanescent, built like Exposition buildings to be pulled down at the end of the season.

So with the painting of architectural accessories. Even Ruskin had to admit the beauty of the Sistine Chapel, where the figures of the arched ceiling are set in a framework of painted columns and pediments and architraves. These, however, he points out, are not "realised," are not painted so that we think they are really

columns and architraves, but so that we see at a glance that they are only pictures of columns and entablatures, as clearly as we recognise the figures to be pictures of men, and not real men sprawling on the ceiling. So that there is no deception to discover, no shock to the judgment, and the eye enjoys the pleasure of the work undisturbed.

A similar case occurs in the Stanze of the Vatican, where the lower part of the walls is painted with what are evidently pictures of architectural objects, used as a dado. A very different effect is seen in such a church as the cathedral of Ferrara, where the whole interior is of plain, flat plaster, but painted to produce a deceptive semblance of columns and statues and other architectural parts, easily detected, and laughable to all but the sternest moralists, who find them "reprehensible."

A large part of our contemporary architecture, especially of the monumental kind, is admittedly superficial. Our stone buildings are really brick buildings, with an outer facing of stone. The classical ordonnances of the exterior have but little to do with the real construction, and on this ground they are denounced by purists. Criticism is just in this case, but why denunciation? If we are Romans in taste rather than Greeks or Mediævals, how can we help it? Personally I prefer more constructive styles to the Roman, but it is hardly a matter for profound emotion either way.

A Paris Sham.

As for the exhibition outside of a building of what is occurring inside, it is agreeable when it can be done, but not always practicable and very often not practised. Take the Hotel de Ville in Paris, for example, a building that is generally admired by both the unsophisticated and the *illuminati*. The high roofs of the central and flanking pavilions might be shorn off and flat roofs substituted without impairing in any way the interior working, nor are there any special rooms inside of which the importance is marked by these high roofs. The parts of the building between the pavilions are lighted by dormer windows, alternately of stone and bronze. The dark bronze frames of the intermediate dormers merge into the dark slate behind so that only the stone ones are noticeable. If all had been of stone they would have coalesced to form a continuous wall. Why should it not have been a continuous wall, carried up to the height of the pavilions, and included under the same flat roof? But that would destroy the design, you say. Truly it would; yet this is to admit that the design is a purely artificial and supererogatory thing "tacked on" on top of the building, merely to be looked at.

Architecture as Building to Look at.

After all, why should it not be? The greatest works of architecture in all ages have been built largely to be looked at. What are all the towers of the Middle Ages for? Some few of them for defence, but of the rest what can we say—to hang bells in? But many Renaissance churches have bells in some unnoticeable corner which seem to serve their purpose as well as if they were in a tower. Moreover, if we must have bells in a tower, why should we have two towers, as is so often the case in mediæval churches and as is still seen to-day? One of the towers must be superfluous.

Whether one or two, how can we justify a spire on top of the towers, an undeniable superfluity? Or, to pass to another matter, what shall we say of the great, stone-vaulted ceilings that were the crown-

ing glory of Gothic architecture? They were begun in an effort to make a fire-proof basilica, but before they were developed to perfection a separate wooden roof over them was found necessary, leaving the vault and the flying buttresses that sustain it a piece of pure theatricalism.

To go still further back to the masters of the world in art, the Greeks, what justification was there for the peristyle of great columns wherewith they encompassed their more important temples? That the service of the gods did not depend upon a peristyle is shown by the number of temples that had none. The peristyle was built, like the Gothic spire, chiefly to be looked at. No doubt, having constructed it, the people could walk in it, conduct processions in it, but they got along without it very well in innumerable cases. Why not at all? And in detail the Greek temple is as much open to criticism, if we are disposed to criticise. A cornice is constructively the edge of a roof, intended to throw the rain-water clear of the building, and the Greeks so used it at the sides of a building; but they carried it up the slope of the roof as well, where it was not of any use. Or, if we let that pass, what shall we say of the horizontal piece of cornice that they carried across under it, forming the triangular pediment? They used it as a shelf on which to put statues, and, as such, one would think that they would at least have made it strong enough to hold the statues. Recent investigations show that they did not—that the weight of the statues was taken by iron supports fixed in the wall of the pediment behind them. The truth is that these cornices, and almost all cornices since, including those of the Strozzi and Farnese palaces, were built simply for appearance, and they undeniably look well. The same is true of most intermediate cornices, string courses, and base courses. They are used because they look well. Their fancied utility constructively is only fancied; a plain, flat wall where there is no offset would serve the purpose better.

The only conclusion is that it will not do to be too hasty in laying down general principles, nor to allow ourselves to become arbitrary in advocating our ideas. Truthful construction, expressive design, may be admirable, but if a little untruth, a little less expression, make the result more admirable, why not use them? "That indignation which we profess to feel at deceit absolute is indeed only at deceit malicious." And there is no malice in architectural equivocation.

These are matters which we may well think over, with advantage.

Soap for Waterproofing Concrete!

Waterproofing concrete by the use of soap and water in place of clear water in the mixing has been used in the construction of a grain elevator on the Danube river in Germany. The concrete for that portion of the structure subject to inundation was placed in two layers. The outer layer, which was $3\frac{1}{2}$ in. thick, was composed of fine-grained concrete containing about 675 lb. of cement and 25 gallons of water per cubic yard. The inner layer is $\frac{1}{2}$ in. thick and is made up of cement mortar prepared with fine river sand. In this the water is replaced by a solution of common potash soap, about 0 lb. of soap being added per cubic yard of concrete. Subsequently the building was subjected to a sudden inundation and, it is stated, stood very well under the test, while a neighbouring structure similarly built but without the soap admitted water.

* An address delivered before the Students of the School of Architecture of Washington University.

THE DURABILITY OF WIRE ROPES FOR LIFTING APPLIANCES.*

BY DANIEL ADAMSON, M.I.M.E.

The question of the durability of the parts of mechanical structures seems to be strangely neglected by all authorities. A designer has generally the choice of several formulæ for calculating the mere strength of a given member, but usually he has to depend upon his own experience for the correctness of the proportions that will ensure for it a reasonable length of life. The durability of wire ropes is a case in point.

The two most important conditions that affect the durability of wire ropes are:—

- (a) Quality of material and size of wire.
- (b) Diameter of pulleys and arrangement of ropes.

Quality of Material and Size of Wire.

The wire used for lifting ropes is of crucible steel having a tensile strength varying from 80 to 130 tons per square inch. Although ropes made from material having a high tensile strength are of smaller diameter, for a given load and a given factor of safety, yet this is not a great advantage to the crane designer because the stiffer character of the wires makes larger drums desirable, if the durability of the rope is to be considered, notwithstanding that some rope-makers claim as an advantage for the stronger material that it does enable smaller pulleys to be used with a consequent lower cost of the working parts of the crane.

The ratio of the diameter of the individual wires to the diameter of the completed rope is an important factor. If the wires are too large they are stressed considerably when passing over the pulleys, and accordingly the material is quickly fatigued and the wires break. Smaller wires, on the other hand, are more quickly worn through by rubbing against the pulleys and against their neighbours in the body of the rope. The stress in a wire due to bending round a pulley is directly proportional to the modulus of elasticity and to the diameter of the wire, and inversely proportional to the radius of the pulley; therefore the radius of the pulley should be increased with an increase in the modulus of elasticity, if the same number of bends is to be endured by a stronger wire of the same diameter. Unfortunately a theoretical calculation of the stresses induced in the wires of a rope by being bent over a pulley does not alone afford a reliable guide to the length of life to be expected from the rope, for consideration must also be given to the mutual wear that takes place amongst the wires.

A Computation.

Assuming for the purpose of comparison that two ropes are constructed of equal size, one from wires half the diameter of those in the other, then for equal strength the one rope will have four times the number of wires and each of the wires will have one-quarter the cross-sectional area. According to the usual formula, the stress due to bending will be half as severe in the smaller as in the larger wires, when the ropes are bent over pulleys of the same diameter. If it be allowed that a reasonable figure for the estimated stress due to bending an ordinary rope over a pulley of a size usually adopted in crane design be, say, 30 tons per square inch, and the stress

due to the suspended load be 10 tons per square inch, there will be a range of stress of 40 tons per square inch in the material each time the maximum load is lifted and released, and the corresponding stresses in the rope of finer wires will be 15 tons per square inch due to bending, and as before 10 tons per square inch due to the suspended load, or a total range of 25 tons per square inch.

As yet, there does not appear to be any agreement as to the exact effect upon the endurance of variations in the working stresses. It seems, however, to be reasonable to assume that a reduction in range of stress from 40 tons per square inch to 25 tons per square inch would increase the life of material, such as ropes are composed of, about 500 times. As no such improvement in the life of a rope has ever been experienced, or is to be reasonably expected, it must be taken for granted that abrasion is the principal factor in limiting the life of wire ropes.

Effect of Abrasion.

When the rope of finer wires is passing over the pulley, there being four times as many wires in it, the pressure at each point of contact between the rope and the pulley and between the individual wires of the rope may be assumed to be one-quarter of what it is in the rope of larger wires. The wires being of half the diameter, the damage done to them by contact, even under this lower pressure, will be at least half as much as occurs to the coarser wires in the other rope, and this half damage done to a wire of one-quarter the sectional area will result in the cutting through of the wire in half the time, so that the effect of abrasion upon the rope of finer wires will be twice as great. If a smaller pulley be used for the rope of finer wires, as suggested by some authorities, the pressure at the points of contact and the stress due to bending will be proportionately increased, so that it may reasonably be expected that with a pulley-diameter bearing the same proportion to the diameter of the wires the life of the rope with fine wires will be one-quarter of that of the rope of coarser wires working over a pulley of correspondingly increased diameter.

A German investigator (Ernst Heckel) refers to the very great surface pressures on the wires at the place of contact with the pulley (amounting in his opinion to as much as 12 tons per square inch) as a vital point in connection with the wear of wire ropes. This high pressure, accompanied as must be the case by relative movement even if quite small, readily accounts for the wear which takes place on the surface of the wires where they touch the pulleys or the other wires in the rope.

Diameter of Pulleys.

The lists issued by makers of wire ropes contain recommendations as to minimum sizes to be adopted, but no information is given as to the effect of using pulleys of different diameters. The author has felt for many years past the want of such information: the experience of users afforded no reliable guidance, presumably on account of the great difference in the conditions under which ropes work in different shops. Reference to a paper read before the Manchester Association of Engineers by Mr. Matthews in 1902 brings to light one great difference in the working of cranes. Mr. Matthews suggested that 400 to 1,700 lifts per crane per annum was the amount of duty required from certain cranes under his control, while the present author, in the discussion on Mr. Matthews' paper, mentioned 32,400 to 43,200 lifts per crane per annum as representing his own experience in

another class of work. Other important features that will affect the life of a crane rope are the average weight lifted and the average height of lift; cranes are generally occupied with loads much below their nominal capacity, but this will vary in different workshops, as will the proportion between the maximum height of lift available and the height most frequently attained by the hook.

Enquiries addressed to the users of cranes elicited very various replies; ropes working upon cranes of the same general design were found to last for periods of from two years to ten years and upwards, and one correspondent suggested that twenty years might be expected from ropes on cranes (of from five to twenty tons capacity) if damage from accidental causes could be eliminated.

LUNACY BUILDINGS.

According to the latest report of the Commissioners in Lunacy, the suggestions and instructions issued by them with reference to sites, general arrangement of buildings, construction of buildings, plans and particulars, and estimates of cost of asylums, have recently been carefully revised. In these revised instructions prominence has again been given to the fact that, while not desirous of in any way discouraging the evolution of new designs for buildings that may possibly tend to the recovery and more successful treatment of patients, the strictest economy will be insisted upon, consistent with suitability for purpose and good workmanship both in construction and equipment. It is also pointed out that elaboration of design for merely architectural effect will not be sanctioned, and that decorative stonework or other expensive material introduced for that purpose will prejudice the approval of the plans by the Home Secretary.

A large number of building schemes, varying much in magnitude and importance, have been under consideration during the year. Of these 86, representing a total estimated expenditure of £295,909, were finally dealt with.

In addition to the above, other building schemes, relating to lunatic hospitals and licensed houses, were passed by the Lunacy Commissioners.

The arrangement, understood to be tentative in character for three years, whereby the Lunacy Commissioners have had in their office the entire services of an experienced architect and some additional clerical help to assist in dealing with plans, estimates, and contracts relating to building schemes, and with the highly technical and important questions connected therewith, has proved most successful—the completeness of criticism, formerly impossible, having tended to promote greater suitability of design and construction and to the advancement of public economy. The Treasury has now sanctioned this arrangement on a permanent basis.

F. G. H.

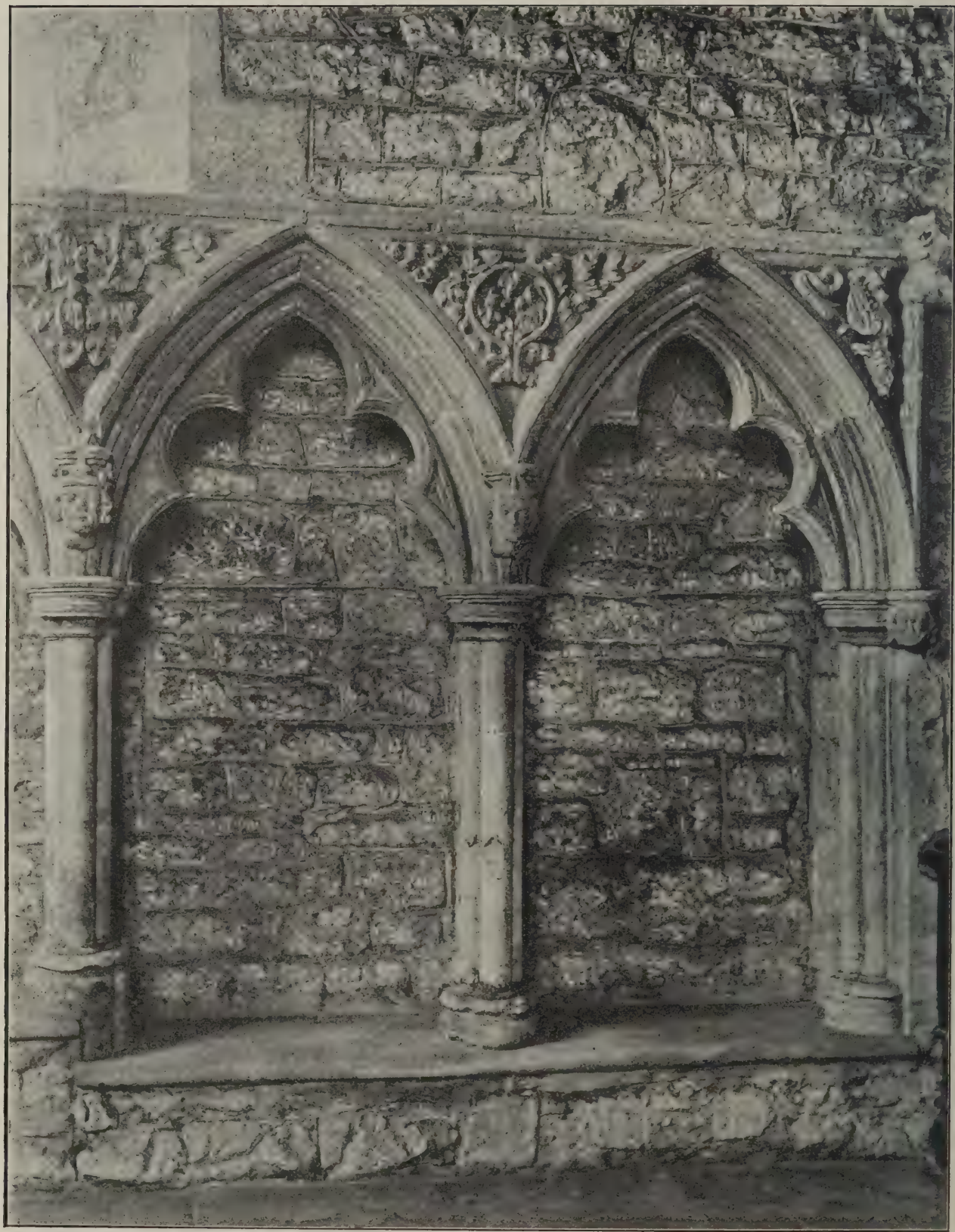
DETAILS—OLD AND NEW.—XLIX

Sedilia in St. Fagans Church, Glamorganshire.

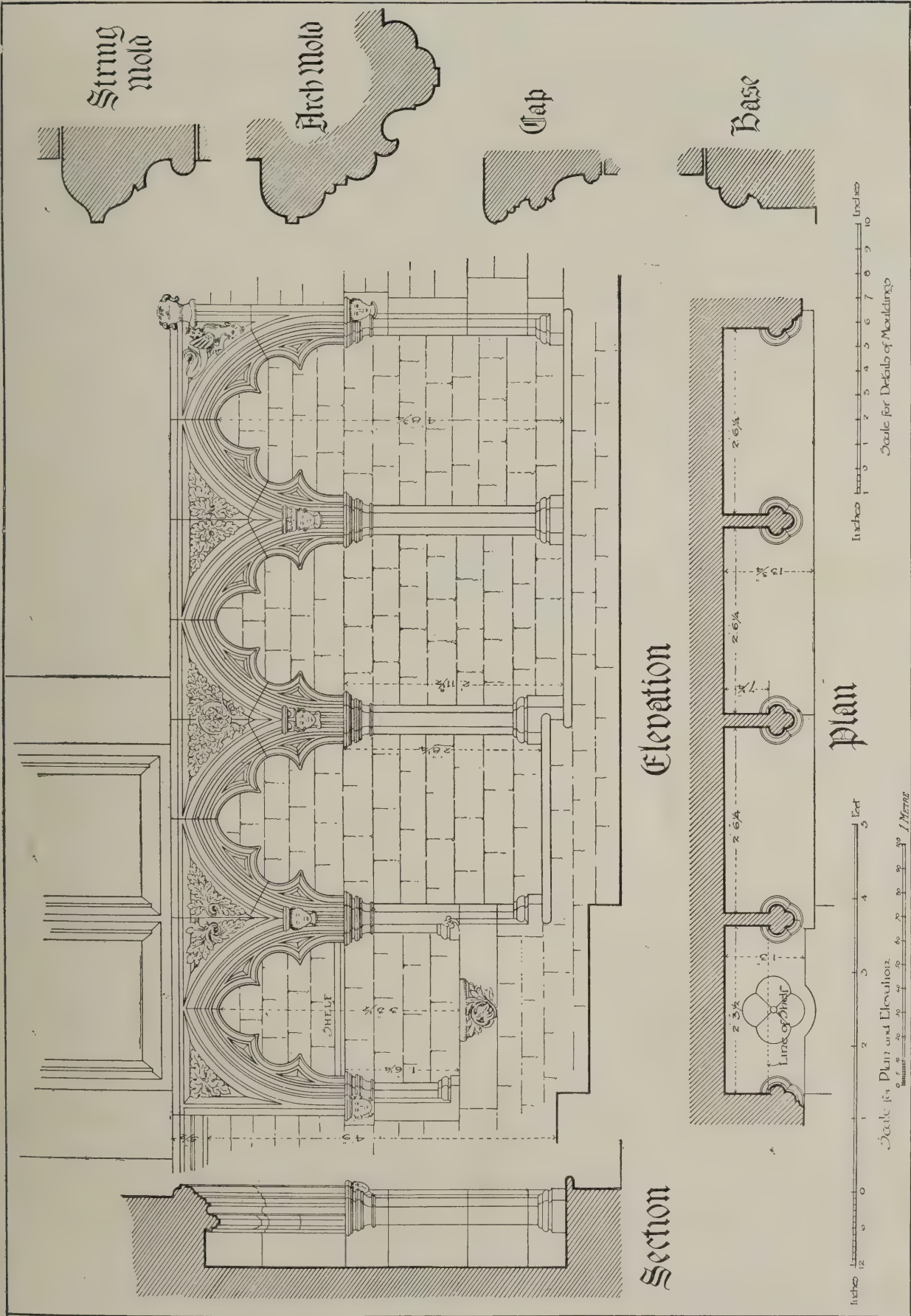
No definite information about this work is available, but it is certainly of the Early English period, the proportions being especially fine. The sedilia are on the south side of the chancel and were formerly covered up with plaster and whitewash; this was removed when the church was restored some years ago, but the original work remains untouched.

* Extracts from a paper read at the Belfast Meeting of the Institution of Mechanical Engineers held in July.

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SEDILIA IN ST. FAGANS CHURCH, GLAMORGANSHIRE.



SEDILIA AND PISCINA, ST. FAGANS CHURCH, GLAMORGANSHIRE. MEASURED AND DRAWN BY W. EATON, A.R.I.B.A.

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OBITER DICTA.

Domestic Architecture and the Modern Bedroom.

No better example of the mansion of the past century could be found than Dudley House, which has just been sold by Sir J. B. Robinson to Mr. John Ward, brother of Lord Dudley and son-in-law of Mr. Whitelaw Reid. It is planned on the typical lines of the great houses in the Victorian era, with two floors given up to reception rooms and only one floor for bedrooms—an arrangement quite out of keeping with modern taste and requirements, and which has, of course, been altered.

The most noticeable feature in the change which has been brought about in recent years in the domestic architecture of London is the difference in the relative importance which is now assigned to the reception rooms and bedrooms. Carlton House Terrace, which, as the "Manchester Guardian" points out, was supposed to be the latest word in magnificence when it was built in the first part of the last century, still shows in the few unreconstructed houses that remain some of the most cramped and ridiculous bedroom accommodation in West London, especially in the servants' quarters. The change which has come about within the last twenty years has been ascribed largely to foreign and American ladies, who refuse to put up with the cramped accommodation in the bedrooms of the Victorian era.

The advent of the motor-car, with garages at some distance away from the house, has swept away the coach-houses and stabling which used to be at the rear of the best premises, shutting out light and fresh air. As a consequence of this improvement, the drawing-room of a big house is now usually built at the back, leaving the first floor available for the best bedrooms.

"The best bedroom is now far more tastefully furnished and upholstered than the drawing-room of the Victorian era, and is frequently used by ladies for receiving their more intimate friends. It has its own bathroom and dressing-room, furnished in excellent taste. The ponderous Arabian, or four-poster bedstead, has now entirely disappeared, and the furniture consists of delicate reproductions of the Stuart, French, or Adam styles. The walls are treated in silk or the finest art papers, and are hung with valuable pictures, while on the mantelpiece and side tables are objets d'art that would be in keeping in any drawing-room. Compare such a room with the best bedroom of the Victorian era, even in the large houses. It was stowed away on the third floor; and as to the servants' rooms, they were little better than rabbit-hutches."—"Observer."

The Potency of the Motor.

In these days what people want to do is to get away from each other. They want quiet and privacy and the possibility of being able to live in country surroundings without perpetually looking over the wall into somebody else's back garden. A great deal more thought is being given now, both by architects and architects' clients, to questions of site and scope of open view than used to be the case even a few years ago. The cause of the change is partly due to an increase in the use of motor-cars, which have taught their owners and drivers that there is no

necessity to live in a crowded suburb, within a mile of a railway station, when you can get country air and country sights and sounds a few minutes' drive further away. What used to be a quarter of an hour's walk to the station in the morning has developed into a five-mile drive, and it is that fact that has completely changed the outlook and the objects which ought to be aimed at by any man planning out a building estate on wise lines. Yet there are landowners even to-day who do not understand in the least what the change means. They decide to develop some part of their property as building land, and they set to work on the old familiar lines; they mark out plot after plot, an acre here and a couple of acres there, regardless of the possibility of a house on one plot interfering with the view of a house on another plot, and naturally one of two things happens. Either because of its nearness to a station or its convenience in other ways, the land sells as the owner has intended it to sell, and one more little patch of suburban villas has been dumped down in what used to be open country; or else prospective buyers and builders, looking at the drawings of the estate plans, perceive that they are being asked to come a long way from London merely to look at somebody else's red roof and kitchen windows, and they go back home without buying. What they want, and perhaps would pay for, is an assured foreground and a view of hills or woods and open sky beyond; they can get red roofs and chimneys anywhere. They range further afield, then, for their fresh air and their view. It is the same with building land as with grouse moors in Scotland; the marketable value of both has changed in a way which only far-sighted people were able to prophesy, for the motor-car has made almost any position accessible, and consequently has multiplied positions for buyers to choose from. In fact, every landowner to-day owns building land, but not every owner knows how to build on it.—"The Spectator."

The Un-Ideal Home.

It is a modern paradox that, while the proposal to erect even a few houses on a celebrated natural beauty spot always arouses strenuous opposition on the part of a large number of people, public opinion is, on the whole, hardly stirred by a far greater outrage on aesthetics—the mean and unimaginative architecture that characterises 99 per cent. of the new houses built in districts that are being "developed" for residential purposes. Suburban, rural, and semi-rural districts of great natural charm are daily being disfigured by mean and ugly houses that have not even the redeeming feature of being characteristic of an epoch or an idea, as much mid-Victorian architecture was. This is one of the things that they do decidedly better in Germany, where a higher standard of æsthetic taste has produced architects and builders who are demonstrating in practice that an artistically designed house need be no more expensive than an ugly one.—"Globe."

Etchings.

In our opinion the most healthy and hopeful signs in British art to-day are the practice, development, and public appreciation of etching. Etching is an art that demands the highest technical accomplishment, certainty and distinction in design, and above all nobility or depth of feeling. Pretence or trifling or theatrical display may for a time deceive when expressed in persuasive colour, but the clear, incisive

point of the needle at once lays bare feebleness of mind and eye. Rembrandt's most impressive visions were revealed in copper, Whistler's sincerest and most vital works are his etchings. Lack of motive in design and of surety in craftsmanship has been since mediæval times the great defect in British art. It is potent in portraiture, but, up to the present, weak in historical, monumental, and decorative painting and sculpture. The qualities in which modern British art fail are supreme in the unrivalled illuminations of the Dark and Middle Ages; in the famous Anglo-Irish Lindisfarne Gospels, the wonderful Book of Kells of Trinity College, Dublin, and in the manuscripts of the second half of the Thirteenth Century, when the British school of illumination was unparalleled in Europe, and our artists were commissioned by the nobles and prelates of the Continent. Since those days imaginative pictorial art in Britain has found its highest expression in the art of two greatly gifted "amateurs," William Blake and David Scott. Both were quickened by that "fine madness . . . which rightly should possess the poet's brain." Mantuanus tells us that we have all been mad once, and if this common calamity assumed the state of "fine madness" we should be glad of a fresh outbreak among artists at any rate. And we think they could not better prepare themselves for its coming than by the practice of the art of etching. It would lead them to discover the essentials of their craft, to compress their thoughts according to its force and quality, and convey it in clear or emotional terms without the exciting rhetoric of colour.—"Morning Post."

Evolution in Japanese Art.

For centuries Japanese artists were so shackled by the conventions of the Chinese schools that almost every germ of original development seemed utterly sterilised. But the apparently innate love of nature, so universal among the Japanese, in time wooed the artistic genius of the nation; and by the time we come to the Ukiyoe and the Shijo schools of painting, the imitated conventions of the Tosa and Kano painters are being supplemented by something akin to nature and to life. As some of these transitions between schools were hardly gradual enough to be quite natural, they must be ascribed more to a change of taste or a return to nature, rather than to the process of evolution. . . .

It is a question whether the achievements of Japan in developing the conceptions underlying Asiatic art are not the climax. Of course there are magnificent eras of evolution and achievement in India and China, but Japanese art has a conception and suggestiveness more rich and yet more delicate in its divine intuition than any of the sources of its origins. Japan has always not only *adopted* but *adapted* the suggestions she has received from other lands, and nowhere is this more true than in Japanese later art and literature. Her life, and numerous of her ideals, she has inherited from Asia; but what she has made out of these, including her art, are truly Japanese. The present momentous influx of western thought and civilisation is disturbing the native ideals, and shaking confidence in the old achievements; but after the period of assimilation has passed, Japan will rise, as she did from the flood of Chinese and Indian suggestion long ago, a new and regenerated nation, with an art and civilisation, let us hope, possessing the virtues of all and the evil of none.—"The Japan Magazine."

BOOK NOTICES.

*Suggestion for Remodelling the
National Gallery.*

This publication* includes a view of the National Gallery as the author proposes to remodel the front block, and of part of Trafalgar Square as it is proposed to rearrange it; plans of the National Gallery as now existing and as proposed to be altered, and a short essay describing the objects aimed at.

The main point in regard to the National Gallery is that the plan is at present wrongly laid out, owing to the mistake, when the present vestibule was made, of leaving the two existing staircases and putting in a third (arranged in a very unsatisfactory manner), instead of clearing out the centre entirely and making one grand staircase. This is the scheme proposed in Mr. Statham's plan, and the new central feature is a dome over this staircase. It is proposed also to alter some of the inner partition walls so as to render the whole front suite of galleries axial and give a vista along them from one end to the other, along a central colonnade.

The author proposes arranging Trafalgar Square in three levels, divided by flights of steps going right across the square, the two upper platforms to be partly laid out as formal gardens; thus making the whole square lead up to the National Gallery. One object in designing the new front was to build up a large mass in the centre which would, as he says, "dominate the whole square," in place of the inadequate and almost paltry existing dome.

From the general plan of the square it will be seen that the new fountains are placed so as to have a direct reference to the planning of the buildings, as they are on the centre line of the minor porticos of the National Gallery, and are also, in an oblique sense, axial with the centre line of the Nelson column buttresses. As it stands at present, neither Trafalgar Square nor its fountains have any reference to the building behind them. The

object has been to connect them with it. The plan also includes the suggestion to alter the line of the street front on the east side of the square so as to bring it parallel with the balustrade of the square. At present it is an oblique line, which appears to have been set out in that purely accidental manner in which street lines usually have been set out in London.

English Mediæval Architecture.

The two small volumes by Mr. Cyril Power under this title* form together an excellent brief treatise on English mediæval architecture. Although the book forms one of a series called "The Antiquaries' Primers," it is written entirely in the spirit of an architect, not of an antiquary. The illustrations, though necessarily very small, are very numerous and represent the right class of illustration for a book on architecture; not mere picturesque illustrations, but plans, sections, profiles of mouldings, etc. Mr. Power thoroughly understands his subject, and while expounding mediæval architecture in the constructional sense, he does not overlook its connection with general history and the state of the country. We have indeed seldom seen a small book on any architectural subject into which so much solid information has been condensed. We are only rather doubtful about the value of some of the isometrical diagrams of structure. Mr. Power says that his experience as a lecturer has convinced him of the value of illustrative diagrams of structure drawn in "isometrical perspective." We quite agree as to their general value; Choisy employed them largely throughout his "History of Architecture"; but they require to be very clearly and systematically made out in order to be intelligible to the general reader. It does not do to put too much detail into them. The one of Salisbury Cathedral, for instance, on page 19 of the book, is rather bewildering and would have been much better for a little simplification. Choisy's diagrams of this kind are models of isometric drawing, and are always quite clear and intelligible, because he never puts in a line too much. Drawing of this

kind is very fascinating to the draughtsman, and there is a temptation to work it up in detail; but the result of doing too much in that way may be to render it less intelligible to the reader.

We do not see why the book is described as "Part I." and "Part II.," as if the two volumes were independent. It is really a two-volume book, the page-numbers running on from the first to the second volume, which goes on chronologically with the subject; neither volume is of much use without the other. It should properly have been described as "in two volumes; price 5s."

MAGAZINES AND REVIEWS.

The most interesting things in the *Burlington Magazine*, to our readers, are the illustrations of objects in the treasury of the Abbey of S. Maurice d'Agaune. These are mostly very ancient work, including a seventh-century cup inlaid with precious stones, and a Merovingian casket which Sir Martin Conway, who writes the article, says is the richest piece of work of the kind that he has ever seen. "The ground is all covered with gilt cells in which are pasted, red for the most part, but with grain-shaped ones of blue or green. A score of large gems (some intaglios) are dotted about, and a trickle of pearls unites them, whilst the rounded crest is covered with cloisonné enamels, chiefly blue and green." Another illustration is of a magnificent ewer, believed to be Byzantine work of the eighth century. The illustrations of these objects ought to be of interest to decorative designers. The illustrations to Mr. Aymer Vallance's third article on "Early Furniture" include a photograph of a chest from the Cluny Museum, in which a kind of architectural arcade is made of twisted spiral strands. There is a good deal of other curious detail in this coffer.

The *Quarterly Review* contains an article by Mr. W. G. Waters on "French Renaissance Architecture," but this is not a special treatment of the subject; it is merely a review of some books on French Renaissance, including those by Professor Blomfield and Mr. Ward.

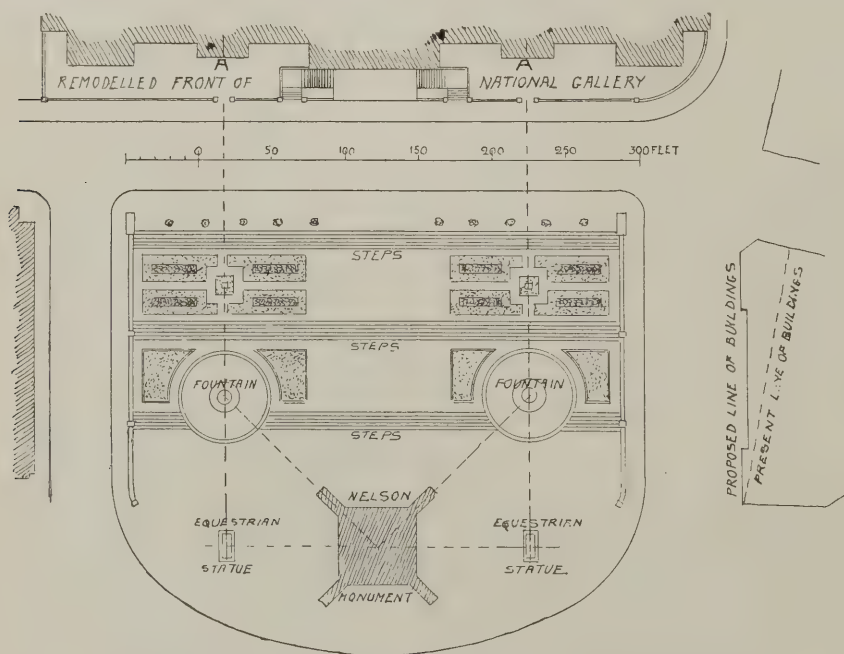
In *Harper* an article on "A Night and a Day in Toledo," by Mr. W. D. Howells is illustrated by some beautiful little sketches by Mr. Norman Black.

Those who are interested in the huge piece of engineering work which is going on in the making of the Panama Canal may get a vivid idea of it, and of the scale of the operations, from the series of sketches by Mr. Pennell, in the *Century* under the title "Building the Panama Canal."

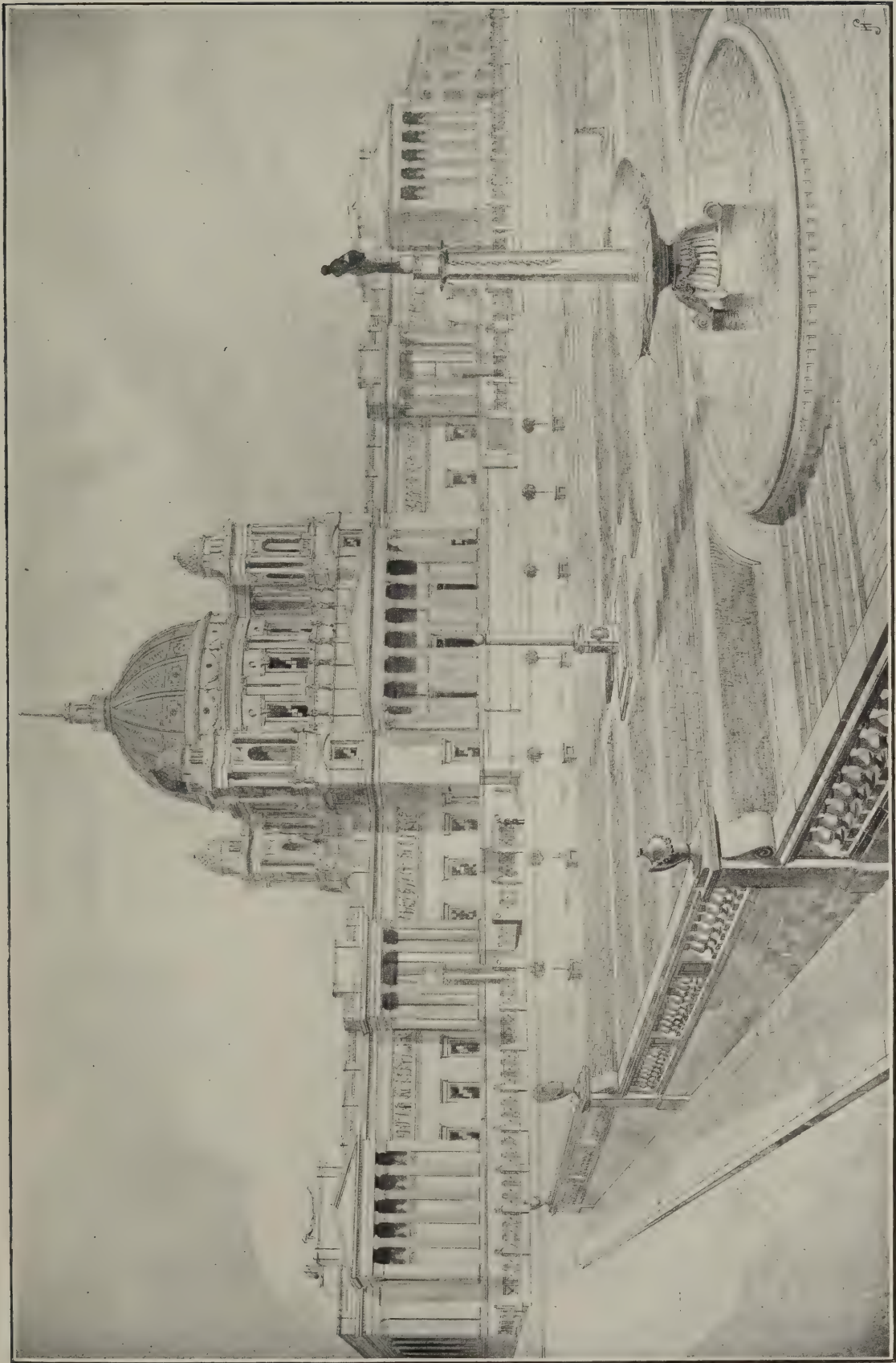
The *Antiquary* contains the first instalment of a paper on a subject which ought to interest all architects—"On the Ornament Called Honeysuckle," by Miss Constance Garlick. She suggests that the real origin of the Greek detail is the Assyrian palmette; we should have thought that almost self-evident on the comparison of the Assyrian and the Greek form of the ornament; the only important difference is that in the Assyrian type the ends of the leaves are rounded and in the Greek type they come to a blunt point; a much better form. And the origin of the Assyrian detail is suggested to have been the head of the palm-tree. But that is not so self-evident. We shall see what further evidence is produced in the continuation of the article.

* Suggestion for remodelling the Front Block of the National Gallery and laying out Trafalgar Square. By H. Heathcote Statham, F.R.I.B.A. London: Sprague and Co. and B. T. Batsford, 2s. 6d.

* London Mediæval Architecture. In two parts. By Cyril E. Power, A.R.I.B.A., Soane Medallist, Royal Institute of Architects. London: Talbot and Co., 1912, 2s. 6d. each Part.



SCHEME FOR THE ALTERATION OF TRAFALGAR SQUARE.
BY H. HEATHCOTE STATHAM, F.R.I.B.A.



SCHEME FOR THE REMODELLING OF THE FRONT BLOCK OF THE NATIONAL GALLERY AND THE ALTERATION OF TRAFALGAR SQUARE.
BY H. HEATHCOTE STATHAM, F.R.I.B.A.

CANTILEVER GRILLAGE FOOTINGS.

The wall columns of the 12-storey loft building at Hudson and Duane Streets, New York, are carried on one side of the building on grillage footings, designed somewhat differently from those ordinarily employed under similar conditions. As the columns are placed close to the plot line, eccentric with their footings which must be contained wholly within the plot line, their loads are combined with opposite interior columns to produce resultants through the centres of gravity of the footings.

This result is often attained by providing separate footings for both columns and supporting on them a cantilever girder fulcrumed on the footing for the wall column. The cantilever girders usually take flange bearings across the upper courses of grillage beams to distribute the load over the relatively short beams in the lower course, and it is generally assumed that a definite centre bearing of the cantilever girder and a symmetrical uniform distribution of load is secured on the grillage beams and the soil below them, and that the soil between the two groups of grillage beams is unloaded.

The engineers for the loft building here referred to considered that irregularities of construction and erection, the deflections of the beams and girders, and settlement due to loading, might produce conditions at variance with these assumptions.

In order to prevent this and ensure positive agreement between the assumptions and the conditions of the finished structure, the lower tier of grillage beams here forms single continuous footings under all of the columns in each set. They are figured, in relation to their bearings on the dry, sandy soil, as double cantilevers supported at the centres of their intersections with the transverse distributing girders and uniformly loaded over the entire lower flange area by the maximum pressure of four tons per square foot allowed on the surface of the soil.

These assumptions result in larger moments and consequently require a larger amount of steel in the grillages than is called for with short beams in separate grillages, a result which the designers considered to be justified by the elimination of any ambiguity in the loading and stresses. As most of the footings consist of a single tier of grillage beams with comparatively short transverse distributing girders, considerably less height was necessary than for a double tier of grillage beams and a long, deep cantilever girder, so that an appreciable advantage of shallower excavation or greater head room was secured.

Mr. W. L. Rouse and Mr. L. A. Goldstone were the architects, and Mr. Myron S. Falk and Mr. Albert B. Hager were the consulting engineers.

REPRODUCTION BY
VELOGRAPHY.

Messrs. Norton and Gregory, Ltd., of Castle Lane, Buckingham Gate, S.W., have recently issued a new booklet on the subject of "Velography," the familiar process of reproducing tracings, of which permanence and perfection of line are the two chief merits. All reproductions are made in printing ink, there being no restriction with respect to colour, although, of course, black is the one generally adopted. The usual variations from black are sepia and imitation pencil. "Velography" copies can be made on a wide variety of surfaces, including tracing and opaque linen, parchment, Bristol board, tracing paper, detail paper, hand-made and machine-made drawing paper, mounted paper and cartridge and plan paper. By means of "Velography" tracings are reproduced perfectly, even to the minutest detail; and remarkably good results have been obtained even when the original has been cracked or dirty and in other respects imperfect. Fifty or more "Velography" copies of one double-elephant tracing can be produced in less than an hour, every copy being a perfect facsimile of the original, except that cracks and other blemishes are not reproduced. Any part of a tracing can, if necessary, be omitted; and parts of several tracings can be assembled so as to make one complete print without any indication of the points of juncture and without inflicting any damage upon the tracings.

Copies may also be made direct from inked drawings, if the original is on good white paper such as Whatman, and neither coloured nor mounted on cotton or holland. The practice is not recommended, however, since it is difficult to ink in a drawing on rough paper satisfactorily enough for photo reproduction. In cases of this kind an extra charge is made.

Copies are taken also on "Record Tracing Linen," and on parchment, the surfaces of both materials being prepared for taking lithographic ink in such a way as to ensure permanence and immunity from smudges. As a consequence, the surface rejects everything of a watery quality; and therefore it is essential that the preparation known as "Velo Medium" should be used if additions have to be made to the copies, whether in Indian ink, writing ink, or colours. "Velo Medium" enables inks and colours to flow readily and ensures per-

manent adhesion to the linen. Additions can, of course, be made to the bright side of the linen in the ordinary way.

Price lists for the preparation of copies from tracings and by the Ferro-Prussiate, Ferro-Gallic, and Ferro-Carbon processes are given in the booklet, which also contains a descriptive account of the various other branches of work to which Messrs. Norton and Gregory give special attention. The greatest possible care is taken with all drawings entrusted to Messrs. Norton and Gregory, whose employees are all under a bond of secrecy. Many other precautions are taken in order to conform with the regulations of H.M. Admiralty, to whom the firm is sole contractor for the preparation of copies of plans.

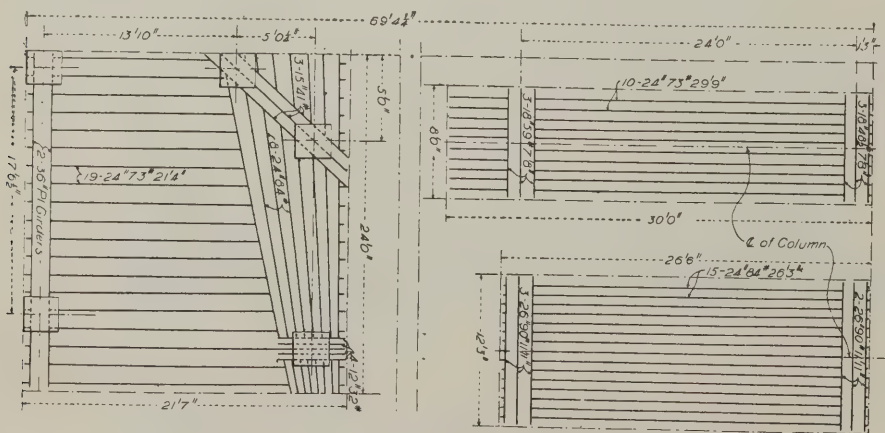
A BUSINESS CONVENTION.

Messrs. Robt. Ingham Clark and Co. Ltd., the well-known firm of varnish and enamel manufacturers, held their Annual Convention of Representatives on July 30th and 31st and August 1st, at the offices of the company in Caxton House, Westminster, the proceedings being of a specially interesting character by reason of the presence of the principals and delegates from the firm's allied houses and branches in America, Canada, Australia, India, France, Germany, Belgium, Holland, Italy, Spain and Portugal, to whom a cordial welcome was extended by the chairman, Mr. F. W. F. Clark.

Mr. W. H. Andrews, president of Messrs. Pratt and Lambert (Incorporated) of America, delivered an interesting address, in which he referred to the great development of the business in that country during recent years. The chairman then declared the Convention formally opened, and the rest of the day was devoted to a general discussion of matters of interest to the salesmen of the company.

On the following day the Convention reassembled at West Ham Abbey, where the works of the company were inspected. Particular interest was shown in the up-to-date plant employed in producing the well known "Britannia" varnishes and the firm's various specialties, including "Pearline" White Enamel and "Abbey" White Enamel, now so largely employed by decorators when the question of price has to be considered at the same time as quality. Practical demonstrations were given by the works manager and his assistants of the uses, methods of application, and results obtained with certain other specialties, such as "Lapcine"—a pale liquid filler and first coating; "Antipore"—a transparent paste filler for open-grained woods; "Lignatine"—a stain in conjunction with oil varnish; and "Riccol" yacht and boat varnish, which is guaranteed not to whiten under the action of fresh or salt water. But the most interesting item in the visit was the inspection of the new Exhibition Hall, recently completed to serve for the permanent display of coach and decorative work on which the manufactures of the company are employed from start to finish.

In the evening the members of the Convention were entertained to dinner at the Westminster Palace Hotel, and subsequently visited various theatres (for which the firm had provided tickets); while on the next day, after a further meeting at Caxton House, the party left for Richmond, from which point a river trip was made on "The King," which Messrs. Robt. Ingham Clark and Co., Ltd., had specially chartered for the day.



PART PLAN OF GRILLAGES AND FOUNDATION GIRDERS.

NEWS ITEMS.

An Appointment.

The Education Committee of the County Borough of Stoke-on-Trent have appointed Mr. F. Morrall-Maddox, of Shrewsbury, as chief assistant in the architect's department.

The Wesleyan Hall, Westminster.

The opening of the Wesleyan Church House at Westminster (Messrs. Lanchester and Rickards, F.F.R.I.B.A., architects) is to take place on October 3rd. Many offices in the building are already occupied.

Alterations at the Alhambra.

Alterations at the Alhambra Theatre, London, W.C., are being made to the constructional plans of Mr. W. G. Sprague, Messrs. White, Allom and Co. being responsible for the decorative scheme.

A Manchester Picture Palace.

The Irlam New Picture Palace, Manchester, is being ventilated by means of Shorland's patent exhaust roof ventilators and special inlet ventilators, supplied by Messrs. E. H. Shorland and Brother, Ltd., of Failsworth, Manchester.

A Museum of Hampshire Relics.

Tudor House, St. Michael's Square, Southampton, which is said to have been built at least 400 years ago, and has been acquired by the corporation for £4,200, has been opened as a museum of Hampshire relics.

Building Scheme for Dovercourt.

An important building scheme has been launched for Dovercourt. Mr. Stanton, of Lewisham, has bought fourteen acres, and had plans submitted showing ninety houses, with tennis courts, on the garden city idea. The scheme will be carried through at a cost of £50,000.

Smoke Inspectors.

The Royal Sanitary Institute have arranged an examination for smoke inspectors. A syllabus has been published, and the examinations proposed for 1913 are to take place at Manchester on April 18th and 19th, and in London on May 2nd and 3rd.

In Memory of Lewis Carroll.

A font in memory of "Lewis Carroll" (the Rev. C. L. Dodgson) has been placed in the new church at West Llandudno, of which Mr. R. T. Beckett is the architect. It is claimed that, as the guest of Dean Liddell at Llandudno, "Lewis Carroll" there wrote "Alice in Wonderland" for the entertainment of his host's little daughter.

Specification for Reinforced Concrete Work.

Ready-made specifications are distinctly valuable as models for adaptation to particular cases, and while any kind of common form, or general instrument of contract, or similar document, may have its disadvantages, such as those resulting from stereotyped expressions and out-of-date requirements, these drawbacks are, on the whole, outweighed by the manifest utility of familiar terms and established usage. Messrs. the Considère Construction Co., Ltd., 5, Victoria Street, S.W., have issued, in handy form, a "Standard Specification for Reinforced Concrete Work," which gives a very convenient synopsis of the requirements for this class of work. Presumably it may be obtained gratis from the firm issuing it.

A New Partnership.

We are informed by Mr. J. T. Blackwell, architect, of 53, High Street, Kettering, that he has taken into partnership Mr. Charles Riddey, A.R.I.B.A., who has had some years' experience in the profession. The practice will be carried on at the above address, as heretofore, under the style of "Blackwell and Riddey."

Railway Buildings and the L.B.A.

A summons brought by the district surveyor of Camberwell against Messrs. R. Cook and Sons, contractors, claiming £41 16s. 3d. fees in respect of work executed by the defendants for the London, Brighton, and South Coast Railway Co., was dismissed by Mr. Baggallay, at the Lambeth Police Court, mainly on the ground that railway buildings are exempt from the London Building Act.

Demolition of a Tall Stack.

The great chimney at the Hastings Gasworks was demolished on August 9th. The bricks of one side of the base were knocked out, and the huge pile fell on to the adjoining building. The operations were skilfully carried out under the direction of Mr. C. F. Botley, so that to the same engineer who designed it fell the task of pulling it down. The chimney was 125 ft. high, and was erected in 1896.

Birmingham Town Planning Scheme.

The Birmingham City Council have sanctioned a town planning scheme for East Birmingham at a cost of £69,000. The district comprised in the scheme covers an area of 1,443 acres, and Mr. Neville Chamberlain explained that this area had been divided into three zones, in one of which eighteen houses to the acre would be allowed; in another, which was more or less agricultural, twelve houses to the acre; and in the third fifteen houses to the acre.

City and Guilds of London Institute.

The programme of the Department of Technology of the City and Guilds of London Institute for the session 1912-13 has just been issued, price 9d. net, from the house of Mr. John Murray, Albemarle Street, London, W. A volume of 374 pages, it contains full information with respect to the regulations for the registration, conduct, and inspection of classes and examination of candidates in technological subjects, and for the award of teachers' certificates in manual training and domestic subjects.

Edinburgh Architectural Association.

Volume VII. of the "Transactions of the Edinburgh Architectural Association," just to hand, shows a record of continued activity and progress. Many places of interest were visited during the session and an excellent series of lectures were delivered by a number of eminent architects and others. The following papers are printed in the "Transactions":—"Holyrood Abbey" (John Watson, F.R.I.B.A.), "Rheims Cathedral and Two Mediæval Churches" (Charles Gourlay, B.Sc., A.R.I.B.A.), "A Goodly Heritage" (Paul Waterhouse, M.A., F.R.I.B.A.), "Useful Hints on Gardening" (J. B. Dunn, F.R.I.B.A.), "Restalrig" and "The Well of Triduana" (Thomas Ross, LL.D.), "Wall Decoration" (F. Morley Fletcher), "Valedictory Address" (John Watson, F.R.I.B.A.), "Borthwick Castle" (Henry Borthwick), "Borthwick Church" (Rev. T. A. Bickerton, B.D.), "Hill House, Dunfermline" (Thomas Ross, LL.D.), "Doune Castle" (Hippolyte J. Blanc, R.S.A.). Copies of the "Transactions" may be obtained, price

5s. each, from Messrs. H. and J. Pillans and Wilson, 86, Hanover Street, Edinburgh.

Chair of Architecture, Manchester University.

Mr. A. C. Dickie, A.R.I.B.A. (of the firm of Kelly and Dickie, architects, London), has been appointed to this Chair, in succession to Professor Capper, who was obliged to retire owing to ill-health.

Reinforced-Concrete Bridge at Bridgend.

A new reinforced concrete bridge over the Ogmore River in the main street of Bridgend, constructed at a cost of £3,000, was opened recently. The supervising engineers of the work were Mr. G. A. Phillips, county surveyor, and Mr. W. F. Tudor, town surveyor, with Mr. J. Edge Taylor as resident engineer. Mr. E. R. Lester, of Plymouth, was the contractor.

Proposed Auction Mart for West London.

The West-End Auction Mart and Estates Club propose to convert the premises numbering 67 to 68a, Piccadilly, W., into public auction rooms. The purchase price of the freehold is £140,000, of which £100,000 will be satisfied by the issue of first mortgage debenture stock, carrying interest at 4 per cent. per annum. The capital of the company will be £70,000, comprising 66,000 ordinary shares of £1 each, and 88,000 deferred shares of 1s. each. The joint secretaries and managers are Mr. H. Gibson and Mr. E. J. W. Hider, of 68, Piccadilly, W.

New London Buildings.

Messrs. A. and S. Wheeler, of Stoke Newington, are the builders of the new branch library at Homerton, London, N.E., which has been designed by Mr. T. Edwin Cooper, F.R.I.B.A., the successful architect in the competition for the new offices of the Port of London Authority. Among other works which Messrs. Wheeler have in hand are a new factory for Messrs. Lever Bros., Ltd., at Stratford, and a new warehouse, storage tanks, etc., for the Anglo-American Oil Company, Ltd., at Greenwich. They have recently finished the extension to the Throat Hospital in Golden Square under the direction of Mr. W. J. Ancell, of Staple Inn.

Charlottenburg Students Visit England.

The famous Technical High School of Charlottenburg (Germany) recently sent about thirty of their students, under Professor Stodieck, to visit the principal industrial centres of England. On arriving at the new dock at Immingham, they proceeded to Manchester, breaking their journey at Sheffield, where they were shown over the principal works. Their visit to the Manchester School of Technology was of special interest, owing to the fact that the day courses at the Manchester school—covering four years, the last of which is devoted to original research—are approximately the same standard as those pursued at the Charlottenburg School. The High Street Baths, the works of Messrs. Crossleys, Openshaw, and the Ship Canal, were also visited in turn. At Liverpool the inspection of the docks was, of course, of premier importance, and in addition they went over the works of Messrs. Lever Brothers, Port Sunlight, and are now visiting other important engineering centres, including Stafford, Birmingham, and London. The arrangements for catering and accommodation were carried out by Messrs. Penningtons, University and engineering tutors, Oxford Road, Manchester.

OBITUARY.

Mr. F. W. Godfrey.

The will of the late Mr. Francis William Godfrey, of the firm of Messrs. Collins and Godfrey, has been proved at £162,427. He left many charitable bequests, including an annuity of £100 a year to an employee, and legacies of £200 each to three other employees.

Mr. H. Holloway.

Mr. Herbert Holloway, of The Gables, Penn Road, Wolverhampton, public works contractor, who was responsible for the construction of the Wolverhampton Corporation tramways, and portions of the Birmingham Corporation tramways, and several large water and sewerage schemes, left estate of the gross value of £101,103, of which the net personalty has been sworn at £42,044.

ISLINGTON HOUSING SCHEME.

At a meeting of the Islington Borough Council a communication was read in which a scheme was outlined to give effect to the provisions contained in the will of Mr. W. B. Sutton for the housing of the very poor. Messrs. Lamb, Son, and France, solicitors, 17, Ironmonger Lane, E.C., wrote notifying that the trustees under the will of the late Mr. Sutton, who left a sum of over £2,000,000 for the erection of model dwellings for the poor in London and elsewhere, were considering the desirability of purchasing about four acres of land in Highbury (Loxford House, Highbury Park), for developing as a site for the erection of dwellings for the poor under the trusts of the testator's will and of expending thereon a sum of over £50,000. The proposal was not to erect block dwellings, but model cottages, with gardens, to afford housing accommodation for between 500 and 600 individuals. The solicitors further intimated that before applying to the Chancery Division of the High Court it was necessary to obtain from the local authority an expression of opinion as to the eligibility or otherwise of the site in view, and of the necessity for further and better housing accommodation for the very poor of the locality. The matter was referred to the Parliamentary and Public Health Committees, for action to be taken in the matter of giving or withholding the necessary certificate.

COMPETITIONS.

Reigate Lodge Estate.

In the competition for the lay-out of this estate forty-five designs were submitted. The assessor, Mr. Raymond Unwin, F.R.I.B.A., has made the following award: (1) Mr. Vincent Hooper, (2) Mr. Reginald Dann.

Public Hall and Library, Dartford.

A public hall to seat 1,000 persons and to cost £13,000 is proposed to be erected at Dartford. The design will be the subject of a competition, with premiums of £75, £50, and £25.

Municipal Offices, Cheltenham.

The proposal to erect municipal offices on the site of the Winter Garden, Cheltenham, at a cost of £11,000—for which eight local architects submitted designs some time ago—has been referred back to the committee in charge of the matter, as none of the designs sent in came within the limit of cost.

LIST OF COMPETITIONS OPEN.

AUGUST 30. SAXON SNELL PRIZE.—Fifty guineas, with medal, for essay on hospital construction. Apply, Sanitary Institute, 90, Buckingham Palace Road.

SEPTEMBER 1. MUNICIPAL OFFICES, GOOLE. Premiums, £30 and £15. Particulars, Mr. R. Tyson, Council Offices.

SEPTEMBER 9. COUNCIL SCHOOL, CHORLEY.—The Education Committee of the Borough of Chorley invite designs for a Council school for about 500 children: Conditions (£2 2s. returnable) from John Mills, Town Clerk.

SEPTEMBER 30. SCHOOL, LLANELLY.—The Llanelly Education Committee invite designs for school buildings and domestic subjects centre at Stebonheath Terrace. Mr. G. E. Halliday, F.R.I.B.A., has been appointed assessor. Particulars from Mr. I. W. Watkins, clerk, Education Offices, Coleshill Terrace, Llanelly.

SEPTEMBER 30. NEW BUILDINGS, UNIVERSITY COLLEGE, DUBLIN.—The Governing Body of the University College, Dublin, invite architects to submit designs for new college buildings. Competition is limited to architects living and practising in Ireland. Mr. H. T. Hare, F.R.I.B.A., has been appointed the assessor. Applications, accompanied by a cheque for two guineas (returnable), to J. W. Bacon, M.A., Secretary and Bursar, 86, St. Stephen's Green, Dublin.

OCTOBER 14. PUBLIC SWIMMING BATH, BALHAM, S.W.—Wandsworth Borough Council invites designs for a swimming bath to be erected at Balham. Conditions, schedule of accommodation, and plan of site may be obtained from Mr. P. Dodd, M.Inst.C.E., 215, Balham High Road, S.W., on deposit of £1 1s. Designs to be sent to Mr. D. A. Nicholl, Town Clerk, Council House, Wandsworth, S.W.

OCTOBER 29. EXTENSION OF MUNICIPAL BUILDINGS, GLASGOW.—The corporation invite preliminary sketch designs for an extension of their municipal buildings. From the sketches submitted, the authors of not more than five designs will be selected for a final competition, at an honorarium of one hundred guineas each. Mr. John J. Burnet, LL.D., A.R.S.A., is assessor. Conditions (one guinea, returnable), from J. Lindsay, Town Clerk, City Chambers, Glasgow.

OCTOBER 31. TOWN PLANNING, HUDDERSFIELD.—The Housing and Town Planning Committee of Huddersfield Corporation offer premiums of 100, 50, and 25 guineas for laying out certain areas. Conditions (two guineas, returnable) from K. F. Campbell, M.Inst.C.E., Borough Engineer, 1, Peel Street, Huddersfield.

NOVEMBER 1. KING EDWARD MONUMENT, OTTAWA.—Sketch models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

DECEMBER 2. SCHOOL BUILDINGS, CARLISLE. Particulars, City Surveyor, Carlisle.

JANUARY 1, 1913. MUNICIPAL BUILDINGS, RANGOON.—The committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars £1 (returnable) may be obtained from the London Agents, Messrs. Ogilvy, Gillanders, and Co., Sun Court, 67, Cornhill, E.C.

ARCHITECTURAL AND BUILDING INTERESTS IN SOUTH AFRICA.

(From Our Own Correspondent.)

JOHANNESBURG, July 15th.

Registration.

The most important matter which the Transvaal Institute of Architects is considering at the present time is the Registration Bill. It has been found that Bill engineered through the Senate of late Transvaal Parliament is defective in many respects, and these defects it is proposed to remedy when bringing in the Bill before the Union Parliament. A meeting of the Institute has been held, to which representatives from the different Provincial Institutes had been invited, and the Bill is in a fair way to being put forward in as perfect a condition as is possible under the varied requirements of the country. Of course, there is opposition coming from the quantity surveyors, but this may be got over satisfactorily.

Rhodes Memorial.

The opening ceremony in connection with the Rhodes Memorial performed by Earl Grey has been an event that will be remembered in history. The architect of this grand memorial to the "Great Empire Dreamer," Mr. Herbert Baker, F.R.I.B.A., has decidedly made his mark in this country. It will be remembered that he is also architect for the new Union buildings at present being erected at Pretoria.

Railway Stations.

The new station shortly to be opened at Pretoria is a fine and handsome fitted structure, erected at a cost of more than £100,000, and will stand prominent among the numerous great buildings of the new Pretoria. A very fine station also about to be erected at Germiston almost immediately. Park Station, Johannesburg, will also be a fine structure—the largest of its kind in the country.

Church Architecture.

One observes with much interest the improvement that is taking place in church architecture in South Africa. In designing the German church in Johannesburg, the architect, Mr. Theo. Schaerer, has departed from the conventional type of design to be found here. Its octagonal tower, more than 80 ft. high, is a prominent object from every quarter of the town.

Rand Hospitals.

There has recently been marked activity in the building of hospitals in and around Johannesburg. The new two wings of the Johannesburg hospital have just been completed, and, from their size, may well be supposed to be capable of meeting the needs of the town for the next two generations. In Germiston and Krugersdorp there have also been erected properly equipped hospitals.

Miscellaneous.

Building in the centre of Johannesburg is exceedingly active.

The new town hall in the Market Square is showing rapid progress.

Mosenthal's great building is nearly completed.

The Y.M.C.A. building, and the Union Club building, which faces it, are both well advanced.

Part of Chudleigh Brothers' fine building has been completed.

These are all within a short distance from Park Station, in which direction the erection of new buildings seems to tend.

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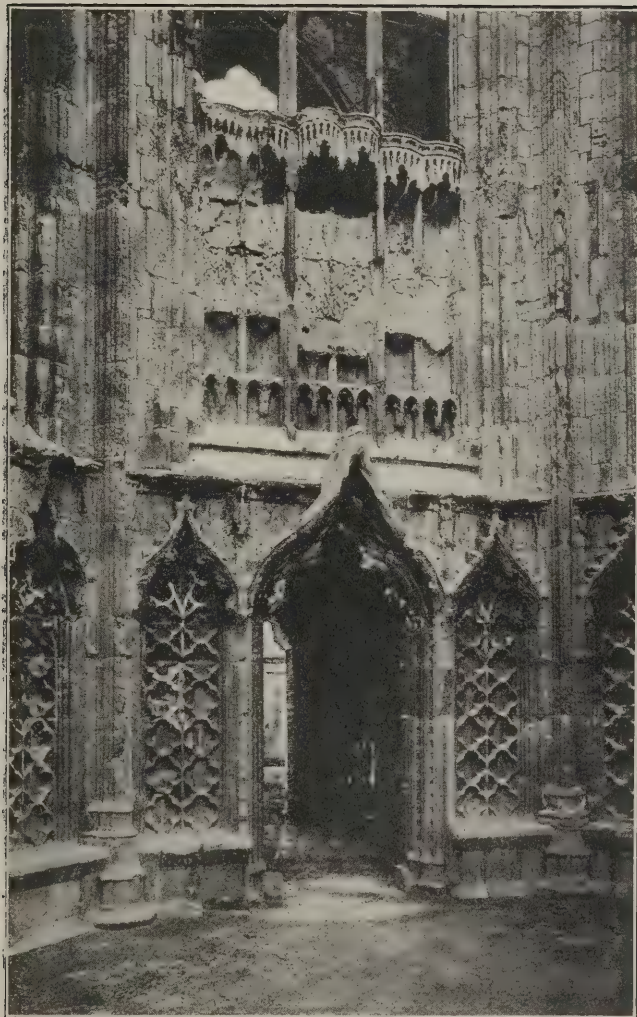


Photo : H. E. Illingworth.

INTERIOR OF HOWDEN CHURCH, YORKSHIRE.

This is one of the photographs sent in for our Holiday Competition.

See page 218.



ST. HELEN'S HOUSE, DERBY: CENTRE PORTION OF ENTRANCE FRONT.

(For particulars, see page 234.)

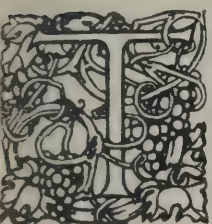
THE ARCHITECTS' & BUILDERS' JOURNAL.

AUGUST 28th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 919.

The Restoration Question Again.



THE question of the right or wrong of restoration, and to what extent it may be right or wrong, has run through a cycle of varied opinions. The origin of the great wave of restoration which swept over England half a century ago, and of which Scott was the most vigorous and (as is generally thought now) the most mischievous apostle, was as much ecclesiastical as architectural. The revival of an enthusiasm for the Church, the desire to breathe a new spirit into ecclesiastical formulæ, naturally directed attention to the neglected state into which the cathedrals and churches of the realm had undoubtedly fallen during what may be called the churchwarden times of the Georgian period. The buildings were not even kept clean internally, and they were certainly disfigured architecturally by the erection of galleries and other additions, often ugly in themselves and always at variance with the original architecture of the building. If the spiritual Church was to resume her old sway over the minds of men, surely the material churches, too, should be cleansed of their disfigurement, should be restored to their original beauty and purity of style. "Donec templa refecimus" was the motto of the situation. We can now see that a great deal of the work done under this conviction was a mistake; but the enthusiasm which prompted it was, after all, a noble enthusiasm according to its lights, and we ought to try to put ourselves in the place of its authors before condemning them as mere vandals. Scott, too, has been unjustly and harshly judged by the present generation. He did what it was then generally considered to be the right thing to do; and at all events he understood the subject thoroughly. Take the case of St. Alban's. When the ancient abbey church was to be established as the cathedral of a diocese it would have been impossible to leave the west front as it then was. It was an almost amorphous mass of bad walling in which whatever remained of the ancient architecture was engulfed, and was itself in a precarious state. Some few remnants of the ancient work sufficed to show to Scott's experienced eye what the design had once been. "It is one of the finest things that has ever been done," he said, "and we'll do it again." He could have done it again; it would have been only imitation Gothic, it is true, but it would have been a good imitation. As things turned out, it has been badly done.

The mistake of the original restorationists lay in not seeing that architecture is history as well as design. The mistake of the extremists of the present day, on the opposite side, is to regard architecture entirely as history and not as design. To them a thing is sacred, however bad in design, simply because it is there. Pearson's rebuilding of the north transept of Westminster Abbey was violently opposed as a destruction of existing work. What was there before it was a piece of very bad eighteenth-century Gothic; not mediæval work at all.

It was of no architectural value, and its historic value only amounted to proving that at the time it was built the spirit of Gothic architecture was not in the least understood. Was it worth while to preserve that piece of history? On the other hand, Pearson's transept is a distinct architectural gain to the building. It may be no more authentic than the eighteenth-century work; it does not matter much whether it is or is not. It is a fine piece of architecture, in harmony with the general style of the building. "That is the worst of it," say the opponents, "in fifty years' time it may be mistaken for mediæval work." It very possibly might be, after a half a century of weathering; but it would be easy to avoid that, in such a case, by inserting an inscribed stone stating by whom and when the work was rebuilt. That would be a much better way of providing for historic truth than leaving a piece of bad work to stand, merely because it was done at a known date.

Keeping in mind the position that architecture is design as well as history, the question of restoration is a two-fold one, according as we are concerned with the rebuilding of what has been destroyed, considered en masse, or with instances of decay in details. If one portion of an originally complete design has been destroyed, as in the case of the west front of Ely, for instance, or the case where one of two similar towers has been built and the other has not, as at Strassburg, there cannot be the slightest doubt that it is an architectural duty, if funds are available, to complete the design in accordance with the portion of it already existing. It is a question of architectural design, not of history. To this we, of course, expect the objection that the new work cannot be in the same spirit as the old; that it is done by workmen with different habits of handling from the original workmen, and probably using somewhat different tools. To this the reply is that as architecture is design and not history, so also it is design and not texture. The design of the existing Strassburg tower, or of the existing half of the west front of Ely, can be absolutely reproduced by measurement; but the texture will not be the same. This point, however, has been pushed too far. It is all very well to say that the new work will look hard and mechanical beside thirteenth-century work of the same design; but it seems to be forgotten that this impression is partly the result of the fact that we see all original mediæval work in a time-weathered condition. People do not seem to try to realise what that same work looked like when it was new. Similar details in modern work undoubtedly look hard and mechanical beside the old; but if we could see a piece of elaborate mediæval work, say the west front of Wells, just as it was when fresh from the masons' hands, we might be surprised to find how hard and mechanical that also looked, in comparison with its effect after six centuries have passed over it. People forget, in comparing ancient work with new, that they have never seen how the former looked when it was also new.

With regard to the other business of restoration, that of dealing with decayed stones or decayed or effaced details, the Society for the Protection of Ancient



FIG. 2.

Photo: Architects' and Builders' Journal

PRESENT CONDITION OF THE GARDEN FRONT OF ST. JOHN'S COLLEGE, OXFORD, AFTER RESTORATION.

Buildings, which has unfortunately mingled much of its really good work with absurdities, appears to have set up recently what may be called its crowning ineptitude, namely, that no ancient stonework is ever to be repaired, or its pieces replaced, with stone, but that an artificial composition of their own devising should be used, in order that it may be at once manifest to the spectator that this is an addition and not original work. That the building is disfigured is of no consequence, it seems, in the cause of truth. This is really archæological conservatism run mad; and, even apart from appearances, it is a question whether this kind of repair is the best for the structure. We heard of an amusing colloquy on the subject, on the scaffold round a cathedral tower that was under repair, when the superintending architect pointed out to one of the emissaries of "the Society" that one of the stones that was completely decayed, and had to be removed, supported weight, and that therefore their composition could hardly be trusted there. Another member of the Society was summoned from round the corner of the tower to help to consider so serious a point, and at length they had to admit that "they were afraid it would be necessary to use stone there." This is almost like an incident out of a Gilbert and Sullivan opera. It is really a pity that the Society should injure their own

credit and influence by such foolish suggestions, as they have really done a good deal to induce careful treatment of old buildings, and to awaken people's eyes to their value, and might be listened to still more if they were more reasonable in their views. The common sense of the subject is that while stone is undoubtedly the best material with which to repair a stone building, it is better to leave a piece of moulding or carving partially injured, so long as the stone is not decaying, than to replace it with a new piece; but if it has unavoidably to be cut out, it is perfectly right to put a restoration detail in its place. Suppose there is a series of niches, and the capitals and canopy of one of them are entirely decayed: is it to be a matter of conscience to leave a blank piece of new masonry there, instead of inserting a modern replica of the other niches in the set? It might as well be said that one was not to replace a broken rail in an old chair. A succession of repeated details is part of the architectural design; to cut away one of them is to leave the design incomplete.

Figure sculpture is a more difficult subject to handle. We should always be in favour of leaving mediæval statues as they were, even if much decayed, rather than attempting to replace them by modern work, unless they have come to that degree of decay that fragments are falling from them; a case which has happened more than once. Then there is nothing for it but to take them down and house them in a museum; and after that the question of what to do must be settled by special circumstances. If a single statue out of a series has had to go, replace it with a modern one, so as not to destroy the ensemble. If a whole group have had to be condemned, it might be better to leave their places unfilled; but it depends on the architectural circumstances. If a number of the statues which crown the pinnacles at Milan, for instance, had perished, we should certainly say, renew them by all means. The result in that case does not depend so much on the individual character of the figures as on the fact that they are figure finials, and on their multiplicity of effect. Their interest is more architectural than sculptural.

Although it was in regard to Gothic architecture that restoration first became a burning question, we are now likely to be faced with it in regard to Renaissance architecture also. There has been time now for some of our Renaissance buildings to begin to decompose, and it becomes a question what to do with them. St. Paul's has



FIG. 1.

ST. JOHN'S COLLEGE, OXFORD: GARDEN FRONT BEFORE RESTORATION.

stood wonderfully well owing to Wren's judgment in using Portland stone; but look at such an instance as the library building in the Peckwater Quad. of Christ Church, Oxford (Fig. 3). What is to be done with columns in that state? They do not look so bad now, but they will almost certainly get worse; the stone surface is decomposing away. From appearances it would seem that the stone used has been especially vulnerable when worked to a convex surface; unless, indeed, the framing of the ground-floor windows has already been restored or refaced. As a matter of preservation of the building it seems necessary that something should be done; and the only radical method seems to be the substitution of new shafts and bases to the columns. The capitals, to all appearance, are in better preservation; they are perhaps of a different stone. Of course, the building would lose some of its picturesque interest when new columns had been built on, but it is not much use clinging to the picturesque when a building is obviously coming to pieces.

Some restoration on an extended scale has already been carried out on the garden front of St. John's College, Oxford. Fig. 1 shows part of the front as it was, Fig. 2 as it is now. It will be seen that

most of the ivy has been removed; it might have been better had it been all removed; ivy may be thought picturesque, but it is a most mischievous parasite to a building. The stonework appears to have been a good deal refaced; and however some may call this vandalism, the general opinion will probably be that the change is an improvement in the appearance of the college. A building going to pieces and overgrown with ivy may be very picturesque, but its usefulness is seriously threatened, and too long an indulgence in the picturesque may lead to its having to be rebuilt altogether. As to the loss of interest in a building which has been partially restored or refaced, though that is certainly obvious in a mediæval building, where there is such a marked demarcation between old and new, it is not so obvious in the case of a Renaissance building, where it may exist to a considerable extent without being suspected. People admire the Banqueting House in Whitehall, for instance, as a piece of genuine work by Inigo Jones; so it is, as far as the design is concerned, but not much of the original facing stonework remains, as it has been so much repaired at different times. Few of those who see and admire the building are aware of this; but it remains as a practical proof that a building may have



FIG. 3.

Photo: Architects' and Builders' Journal.

DEAN ALDRICH'S LIBRARY IN THE PECKWATER QUAD. OF CHRIST CHURCH, OXFORD.

(Note condition of stonework.)

been much restored and still preserve its interest as the design of a great architect. So with another remarkable work by Inigo Jones, the portico of the church in Covent Garden, or what one must call the portico, though it is not at the entrance end of the church. Those are not the actual columns which Inigo Jones put up, but they represent his design, and the whole, though a rebuilding after a fire, still bears the impress of his strong and masculine architectural genius. Those two buildings are examples of the fact that architectural design still counts for something, in spite of repair or rebuilding, and that restoration, when the state of a building renders it practically necessary, need not be regarded as involving the destruction of all its architectural interest.

The Post Office Fire.

THOSE who for years past have been urging the need for every large building to be efficiently equipped against outbreaks of fire will have read with great satisfaction how the fire at the Central Telegraph Office last Saturday night was overcome before it had time to do much damage. This was an instance of the benefit of organised staff drill and fire brigade service in conjunction with adequate means of escape, and the provision of ample fire-extinguishing appliances. As things turned out, the damage was restricted to the fusing of wires around the boards, with the consequent inconvenience of some hours while the telegraph connection with the provinces and the Continent was broken; but it might have been quite otherwise if no proper provision against fire had been taken. The hydrant system at the General Post Office, it may be mentioned, is a very complete one, the north, west, and east buildings being encircled by a 6-in. ring main fed by electrically-driven pumps, and supplied from two entirely separate service mains. As explained by Mr. A. J. Stubbs (senior assistant engineer to the Post Office), the fire risks at the General Post Office appear to be colossal, but opposed

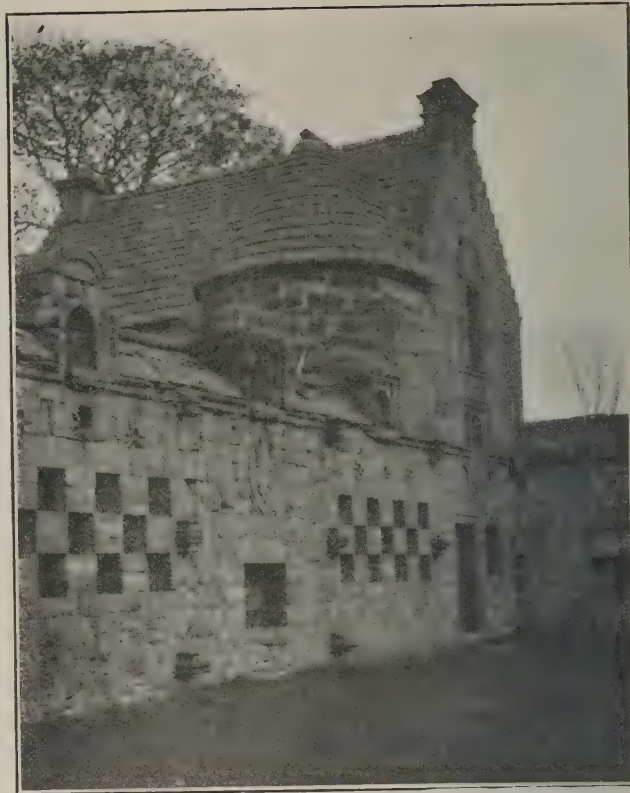


Photo: Arthur Boulton.

SUMMER-HOUSE, EDZELL CASTLE, FORFARSHIRE.

to them is the constant occupancy of the rooms, whereby the risk of a fire remaining long unnoticed is materially reduced, and the facts that the proportion of combustible material is really relatively slight, and that the hydrant system, supplemented by hand pumps and buckets, and controlled by professional firemen, is unquestionably efficient, and can be put into immediate service by a localising press-button call system.

Kirby Hall.

IT is a satisfaction that there is some chance of that fine relic of Elizabethan and Jacobean architecture, Kirby Hall, being repaired and restored to use as a habitation. The house was in a habitable condition in the early part of last century, and the stonework is still in comparatively good condition. There is something so exceedingly fine and stately in the portion with the large mullioned windows and the pilasters between them, so familiar in architectural sketch-books, that it is melancholy to think of so noble a piece of domestic architecture going slowly to ruin, as it certainly would if left longer in its present condition. The restoration seems well worth doing.

A HOLIDAY COMPETITION.

THE holiday competition which we instituted has aroused a good deal of interest among our readers, from many of whom we continue to receive photographs. In the present issue we publish two by Mr. H. E. Illingworth, A.R.I.B.A., of Leeds, and one by Mr. Arthur Boulton, of Brechin.

The object of the competition is to present some interesting buildings or details of buildings which readers have photographed whilst on holiday, and which are out of the ordinary class of illustrations. For such photographs as we reproduce we will pay on each a fee of 5s or 10s. 6d. (according to the value we place on them). Prints should preferably be on glossy paper. It is optional whether they are mounted or not, but the name and address of the sender must appear on the back of each. The photographs must have been taken this year.



Photo: H. E. Illingworth.

ENTRANCE TO S. GIOVANNI, VENICE.

HERE AND THERE.

I HAVE just come across one of those nondescript paragraphs concerning the laying of the foundation-stone of a new Congregational church, and this recalls to my mind the fact that Nonconformist church buildings are, with very few exceptions, such poor examples of architectural design that it makes one shudder to look at them. Now this should not be so; there is nothing in the service that puts a ban on fine architecture; and it is all the more regrettable therefore that up and down the country we should have so many wretched designs inflicted on us. Nonconformity does not countenance elaborate ritual, it has no place for processions, and will have nothing to do with what is called spectacular religion. In Roman Catholic churches, and to a less extent in English Established churches, the altar is the dominating feature to which all eyes are to be directed; the pulpit being a less important matter. In Nonconformist churches the reverse is the case. The pulpit stands for the altar, and the sermon is the chief factor in the service. Hence, to fulfil the conditions, the pulpit must be so placed that everyone can both see and hear the preacher. This would seem to indicate the basilica to be the type best fitted for the purpose—an unobstructed hall with a narthex. And very fine architectural conceptions can be achieved out of such a plan. Taking away the side chapels, Westminster Cathedral is an example of basilica type and, though in that case the magnitude of the building contributes largely to its magnificent effect, the plan is fundamentally right enough to be applicable with success to Nonconformist churches. Unfortunately, most of these latter are, or at least the modern ones are, based on English church lines, with an organ substituted for an altar, and an abundance of gallery room provided. Now to sit facing a row of organ pipes is about the last way to acquire any feeling of devotion, and it is time that the organ in Nonconformist churches was put in another position—over the west gallery, for example. But it is not only the disposition of the buildings that is wrong; their architectural detail is only too frequently of the most unfortunate description. Modern English Established churches do not often display a high level of achievement, but, to my mind, the Nonconformist churches are worse. Whether it is that their designers are a less cultivated set of men, or that the buildings fail by being mean copies of better models, is difficult to determine; but the fact remains, you very rarely see a Nonconformist church which is not a flagrant piece of architectural design. I write without any religious bias: one form of honest belief has just as much right to exist as another; but when we come to look at church buildings purely as architectural designs there is nothing for it but to moan that so much good brick and stonework should be put to such poor use.

* * * *

Mr. Chesterton, I believe, is about to publish a book he has written on "Types of Men." If that is the right title, let us hope he will devote some of his paradoxical persiflage to so promising a subject as that of the genus architectus. For the architect has his types like the rest. And having come in contact with a good many of them I write with a certain amount of warmth, both friendly and hostile. I am glad to have known many architects whose work I admire and for whose manner I am grateful; these have time to remember that the men in their offices and the people with whom they are brought into contact in the ordinary course of business have a right to be treated decently; as a result, these architects are respected and thought of kindly. But I have known others who have not had even bare civility for anyone less than a prospective client of ample means. It is bad enough when these architects are men of ability—in a certain measure their fault is mitigated though not excused by good work produced—but when one has to

deal with a sullen crotchety animal whose work gives you a nightmare, the position becomes intolerable. It is a peculiar fact, too, that in offices where the principal is either a boor or a super-man, assistants take on his manner; and so we are confronted with the spectacle of an architectural galaxy of incivility, snobbishness, and ultra-superiority, in diminishing stages.

* * * *

We all respect the suffix "A.M.I.C.E." and even more "M.I.C.E.," because we know that those letters stand for certain established qualifications in a professional body, but when, on notepaper headings and elsewhere, I see the letters "C.E." after a name, it gives me the feeling that this is another case of professional posing, or imposing. If "C.E." stands for "civil engineer," then, with equal propriety "Q.A." might stand for "qualified architect," which reminds me that there used to be a sham institution somewhere in the neighbourhood of Chancery Lane which, for a certain fee, enabled you to rejoice in the letters "F.I.A.S.," or some other combination purporting to represent that you were a Fellow of an institution of architects and surveyors. The R.I.B.A. we know, the Society of Architects and the Surveyors' Institution we know, but this other professional body is unfamiliar to us; it would appear to have had no other existence than in the mind of the person who was cute enough to devise still another means of getting money out of people for nothing. I have not come across any recent evidence of the dodge, but some years ago, after receiving a letter from an architect with the bogus initials after his name, I endeavoured by means of a bogus letter of my own to seek admission to the mysterious society. I was not so clever, however, as the prime-mover in the concern, and never could get into touch with him, nor find out exactly where the offices of the society were.

* * * *

A putty medal is a reward frequently recommended in conversation, but until I read the account of some police court proceedings at Bow Street last week, it never occurred to me that there might conceivably be such a thing as a putty memorial. Yet that idea was certainly in the mind of Mr. Edward Rose when taking a Sunday afternoon walk with his wife around the joint creation of Sir Thomas Brock and Sir Aston Webb in front of Buckingham Palace. There is a notice requesting people not to walk on the marble steps, but Mr. Rose could not take this literally, and so he used the end of his umbrella to settle the point; result, a nasty scratch, found, after careful measurement by His Majesty's park keepers, to be four inches long and involving two pound ten's worth of rubbing down to get rid of it. In the course of the police court proceedings the defendant was described as a Hampstead builder and decorator who did work as a journalist in his spare time. I have frequently seen a notice indicating the combined business of builder and undertaker (the work of the latter not necessarily being the outcome of the former's labours), but "builder and journalist" has quite a fresh look about it. The public may have supposed Mr. Rose to be very foolish in imagining the Queen Victoria Memorial to be made of putty, but, being a builder, he would have known better than they that things are not always what they seem. "All is not marble that glitters" might very well be set at the head of a copybook for incipient builders. The fine marble columns, for instance, which stood in the entrance of the New Gallery were nothing more than hollow wood casings very cleverly painted, and the half-timber work at Barnes Station is a mere framing with a canvas backing, while at Sadler's Wells Theatre they have dispensed with this small concession to reality, and just painted the beams on the plaster skin. After all, even so simple a thing as a "hard, sound, well-burnt brick," as the specification says, may not be that if the clerk of works doesn't arrive early enough, so why should one suppose marble to be always what it looks like?

UBIQUE.

THE PASSING OF THE G.P.O.

SCARCELY more than ninety years ago a public competition was held in order to obtain designs for a new General Post Office. St. Martin's-le-Grand was the site chosen, not only on account of its centrality, but also because it afforded ample accommodation for the arrival and departure of the mail coaches. Architects were invited to submit designs, and nearly one hundred different schemes were sent in. Few of these are now extant, but a refined design by John Goldicutt is preserved among his collection of sketches and drawings in the library of the Royal Institute of British Architects.

Though so many schemes were before them, the Lords of the Treasury were not so easily satisfied in those days as they are now; and in their perplexity they decided to put the entire undertaking into the hands of Mr. Robert Smirke, who erected the building at a cost of £240,000. For many years after completion it was thought to be one of the sights of London. Have we not honest John Browdie's views on the subject? "Ecod, if thot's on'y a poast office, I'd loike to see where the Lord Mayor o' Lunnon lives." The building was opened for business in the year 1829, forty-five years having elapsed since the establishment of Mr. Palmer's system of mail coaches, the latter carrying an armed guard. Although this scheme obtained the approval of Pitt, it had to encounter and live down a good deal of prejudice, as well as considerable opposition from the Post Office authorities. Compare the enormous volume of matter which is handled in the numerous buildings at St. Martin's-le-Grand at the present day with the humble beginnings of the system of three hundred years ago, when James I. stepped in and appointed a Postmaster of England for foreign parts. In his reign the total annual payment for the entire Post Office staff was only £255 5s. 10d. Small wonder that the accommodation had necessarily to be increased from time to time. The first office was originally in Cloak Lane, Dowgate Hill; when it became the General Post Office it was moved to the Black Swan, Bishopsgate, which was burnt in the Great Fire of 1666. After this it was transferred westward to Brydges Street, Covent Garden, and thence, in 1690, back to the heart of the City—to Lombard Street. There it remained until the increased prosperity that followed the overthrow of Napoleon; and Smirke erected his monumental structure



THE OLD GENERAL POST OFFICE AS AT PRESENT, WITH
ATTIC STOREY.

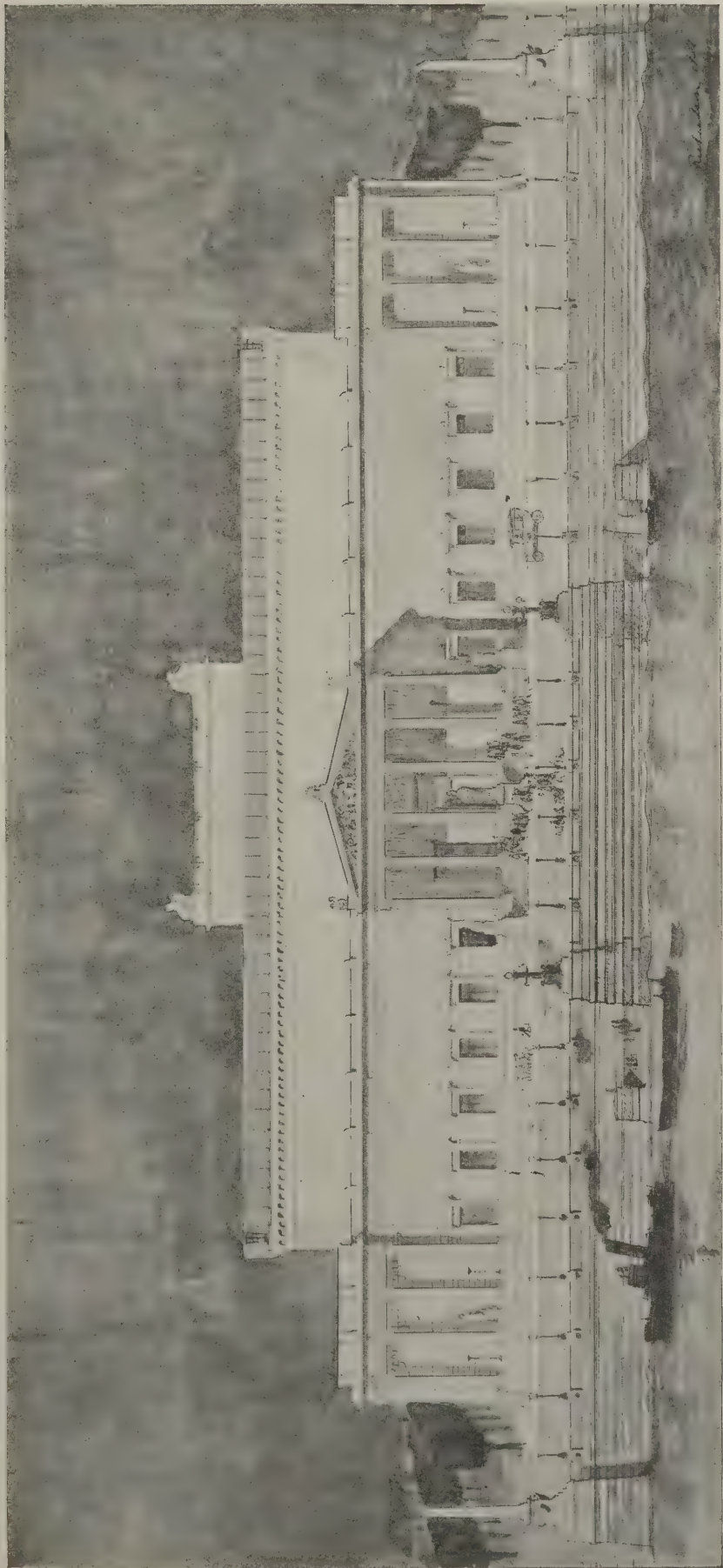
to serve, as was then thought, for all time. Towards the early 'seventies the accommodation was again found to be inadequate, and Mr. J. Williams, the talented architect employed by the Government to design post-offices throughout the country, erected the splendid pile at the corner of Newgate Street. In the meantime, the older building underwent changes; in particular, the incongruous attic storey was added (see illustration), with resulting loss of dignity. The removal of Christ's Hospital to Horsham gave the authorities an immense site for building purposes. Accordingly, a scheme embodying reinforced concrete construction was prepared by the Office of Works, and the large new General Post Office was completed in 1910.

We have now to consider the intrinsic value of Sir Robert Smirke's structure; to appreciate its design in relation to the other works then in progress; and to admire the tenacity of purpose which evolved such disciplined architecture.

Without delving too deeply into biographies or musty Lives of Architects, it is sufficient for us to note that at this period, 1823, Sir John Soane was busy with the Bank



THE OLD GENERAL POST OFFICE AS IT APPEARED IN 1874.



It is suggested that the extension of the Embankment between the Houses of Parliament and Lambeth Bridge would form an excellent site for this building.
SCHEME EMBODYING THE FAÇADE OF THE OLD GENERAL POST OFFICE (BY SIR ROBERT SMIRKE) IN A DESIGN FOR A NATIONAL GALLERY OF SCULPTURE.
BY RICHARDSON AND GILL.

of England, Nash had completed Regent Street, and Sir Robert Smirke enjoyed a practice equal to either of the former; in fact, the major portion of the important work then open to the profession was shared by these gentlemen. Cockerell had returned from his studies abroad to assist his father; Wilkins and Gandy-Deering were about to join forces.

Sir Robert Smirke, R.A., was the second son of Robert Smirke, the subject painter. Born in London on October 1st, 1780, he passed his early years in the Metropolis, was educated at Apsley in Bedfordshire, and in 1796 became a pupil of Sir John Soane, in whose office he remained for a year. In 1801 he commenced his foreign tour, then considered an indispensable adjunct to an architect's education, and visited France, Italy, Sicily, and Greece; returning through Germany to England in 1805.

In the splendid system of pupilage, supplemented by study at the Royal Academy, which then appertained, may be seen how the continuance of the Classic spirit was made possible. George Dance, the younger, inspired by the fancies of Piranesi, communicated something of his enthusiasm to Soane, from whom Smirke caught the tradition, and, in turn, imparted it to Cockerell. An academic tone ensued which was totally different from the affectation of the Burlington age, and if it became obsequious, for a time, to the researches of the antiquaries, it nevertheless produced monumental buildings remarkable for their rich simplicity.

The lash of criticism has fallen rather severely upon the creations of Sir Robert Smirke. It is true these reveal none of that warmth of imagination which is displayed in the works of Professor Cockerell, neither does the detail appear to be inspired like the subtle contours found in Elmes's masterly structure; yet Smirke knew the meaning of dignity, and understood how to impart correct character. If we compare his chief buildings, the British Museum and the General Post Office, with other works of the same period, they will not lose by the com-

parison. His chief fault lay in this—that, having imparted a dignified appearance to the exterior of a building by sheer mass alone, he neglected to introduce suitable sculptural ornament as a foil, and the result leaves much to be desired. On the other hand the interior decoration of the British Museum is superb. Is there a richer interior than the King's Library, could there be a more explicit arrangement than the grouping of the antæ in the Egyptian Room?

Smirke's mind worked in one groove, constant and sure, but not elastic. The achievement of the purely correct was then an accepted trait in Englishmen, this, probably, being the outcome of insularity. Had Smirke been able to interpret the Classic spirit in the same terms as Schinkel, his architecture would have gained in spontaneity. Both at Bloomsbury and St. Martin's-le-Grand he was handicapped by the sites selected by the authorities; sites convenient of access, it must be ceded, but very badly adapted for architectural display.

The old General Post Office will soon have disappeared—the housebreakers are already at work inside it. The British Museum, however, will stand for centuries, and perhaps the next decade will see its southern façade opened out to High Holborn.

Various schemes have been mooted for rebuilding the Post Office façade elsewhere. One suggestion is to include it in a public shelter at Shadwell, another to adapt it for a pavilion in Hyde Park. On the opposite page we illustrate what appears to us to be a far better scheme, according to which Smirke's façade would be incorporated into a design for a National Gallery of Sculpture. The authors of this fine design are Messrs. Richardson and Gill, architects, of London, W.C., who suggest that the extension of the Thames Embankment west of the Houses of Parliament to the Tate Gallery offers a unique opportunity for a suitable site; or will the neglected stones melt away into nothingness, like those which once formed the colonnade to Burlington House?



THE OLD GENERAL POST OFFICE, ST. MARTIN'S-LE-GRAND, BEFORE THE ADDITION OF THE ATTIC STOREY.

(Reproduced from an old lithograph,—1852—by kind permission of Mr. Herbert Batsford.)

THE NEW LAW COURTS.

General Description.

The extension of the Royal Courts of Justice, built on the strip of garden land on the west side of Street's building, is now practically complete, after more than three years' work. There are four additional courts: two Divorce Courts, the Court of Criminal Appeal, and the Court of the Railway and Canal Commission. These additions have long been urgently required, the two temporary courts that were put up in the Judges' Quadrangle having been found insufficient.

When the proposal of building on these garden grounds was first mooted it provoked some opposition, and the question was brought up in Parliament; but the First Commissioner of Works argued that the land had always been intended for the extension of the building, when required, and pointed out that it was only made into a public open space on that understanding. It may be mentioned that the late George Edmund Street intended to cover this ground with the great Record Tower, surrounded by subsidiary offices, but was hampered by the conflicting interests of the Law Officers and the then Minister of Works. Had Street had his way, a more adequate provision for expanding accommodation would have been made, but his original scheme of placing the courts around the great hall was, unfortunately, never realised.

The new buildings, which have cost approximately £100,000 to complete, have been designed by Sir Henry Tanner, I.S.O., F.R.I.B.A., supervising architect to the Office of Works, and the spirit of Street's work has been carefully followed. To the Strand the frontage presents a crocketed gable, surmounted by a statue of Justice—an unconventional conception of the female figure, standing stern and determined, with hands resting on the crosspiece of a sword, and the scales extended in front. This figure is the work of Mr. Stevenson, of Chelsea. At each end of this elevation there is a turret, to match the original building. A bridge, consisting of three arches, connects the four new courts with the court level of the old building and spans the old steps that form an approach to Carey Street.

Entering from the Strand, the Divorce Court Judges have an electric lift to their rooms. A point of interest regarding the arrangement of this court, in view of the protests against the publicity given to divorce trials, is the increased accommodation for the public. In the old court about 300 persons in all could crowd in to the hearing of the case; now nearly 500 will be accommodated in the new court. Under the Court of Criminal Appeal there are nineteen cells, about 4 ft. square, and from an adjoining corridor there is a staircase direct to the dock. Those who know the present Law Courts will be glad to hear that in the new premises the question of ventilation has been very carefully considered. Below are given some detailed particulars.

Heating and Ventilating System.

Heating and ventilation are on a combined system. The four courts are heated on what is known as the "balanced system," and the remainder of the building by direct heating and extract fans.

All fans are electrically driven, being direct coupled to the motors, and each motor is fitted with a regulator, by means of which the fans can be made to deliver any quantity of air, from the smallest

volume up to their full duty. Such a system, fitted, as it is, with full control, enables the heating attendant readily to adjust not only the quantity but also the pressure of the air passing through the courts and corridor.

The main fresh-air inlet is situated on the north side of the building, remote from the dust created by the traffic in the Strand, and the air, immediately it is drawn into the building, is thoroughly washed by passing through a wire-gauze screen, against which a supply of fresh water is freely sprayed. The air then passes through four 36-in. fans into the batteries, which consist of cast-iron sections with cored extended surfaces, and is directed in any desired proportions by dampers through or past the heater. The warm air is distributed into the courts through Tobin tubes connected to an equalising chamber, into which it passes after leaving the battery chambers.

The heating of the rooms and minor corridors is accomplished by means of direct radiators arranged under windows and provided with baffle-plates, behind which are "hit-and-miss" gratings admitting fresh air.

The vitiated atmosphere from the four courts is removed by two large exhaust fans fixed in a central chamber at the top of the building and common to all the courts. The openings from the courts to the extraction chamber are controlled by regulators, so that the amount of air taken from any court can be regulated to suit the quantity of air being pumped into the court.

In addition to the above-mentioned fans, four extraction fans are provided for drawing air from rooms and corridors in other portions of the building, and these are quite apart from the ventilation of the courts.

All the heating units are fed with steam from boilers situated underneath the great hall. The steam, which is generated at a pressure of 160 lb. per square inch, first does duty in two direct coupled triple expansion steam electric generator sets, from which portions of the existing building are electrically lighted, and is then passed through all the heating units. Powerful steam-driven vacuum pumps are used for the removal of the air and condense.

At times when the lighting load is heavy the steam feed necessary for the engines is not sufficient to do all the heating, and in such circumstances the steam passes direct to the heating system through properly adjusted reducing valves. By means of these valves and the regulation of the vacuum pumps, the pressure and, consequently, the temperature of the steam in the heating batteries and radiators can be regulated throughout a range from a few pounds above atmosphere (about 220 degrees Fah.) to about 7 lb. per square inch below (177 degrees Fah.). Under normal working conditions this pressure will, of course, be kept at the lower value to prevent local overheating of the air—a very common fault in steam heating systems.

The statue of Lord Clive shown at the Royal Academy has been removed from Burlington House to the small garden adjoining Gwydyr House, Whitehall. Its erection here, however, is temporary only, as, when the works on the new Government offices are completed, it will eventually—four or five years hence—be placed next the entrance to the India Office, at the head of the steps leading from Charles Street to St. James's Park.

LONDON SQUARES AND CRESCENTS.

The garden squares and crescents of London, inspired, in the phrase of Mr. John Burns, by the enlightened self-interest of private ownership, are 400 in number, and each possesses an architectural charm of its own. Many of these squares are known to have been laid out by eminent architects; but even if documentary proof were lacking, it would still be easy in many cases to ascribe the authorship from the style and treatment of the architecture. How would it be possible, for instance, to associate the delicate refinement of Fitzroy Square with anyone but Adam, or the stucco formality of Regent's Park Crescent with anyone but Nash? A number of the estates which cover so large an area of the north side of London, however, were laid out by the various official architects whose names, unfortunately, are lost in the obscurity of the past.

Nash and Regent's Park.

Under the able guidance of Professor S. D. Adshead, of Liverpool University, a party of students from the Summer School of Town Planning at Hampstead were recently conducted over a number of these squares for the purpose of gaining an insight into their value as examples of civic design. A start was made by brake from Golder's Green Station, and a drive was taken around the small estate at St. John's Wood laid out by Mr. William Willett. Apart from the architecture of the houses here, apparently designed by a number of highly competent architects, the chief point of interest was the skilful use made of solid square privet hedges. The drive was continued into Regent's Park; Hanover Terrace, Clarence Terrace, and Cornwall Terrace being passed in succession. Professor Adshead explained that these fine palatial buildings formed part of the scheme prepared by Nash in the competition for the architectural treatment of the park. The terraces of houses were continuous compositions; and the great merit of the whole scheme was the symmetry of its lay-out, which, of course, was due to careful supervision and control. Attention was drawn to the axial situation of St. Marylebone Church in relation to York Gate.

The crescent, Professor Adshead explained, was also part of Nash's original scheme, and the idea had been to take a continuous thoroughfare right down to Piccadilly, but through falling foul of one of the ground landlords the scheme had to be abandoned, with the present result. It was also proposed to carry the road through to Parliament Hill, for the use of the Regent, but it had been found necessary to terminate it with the crescent at Marylebone Road.

Fitzroy Square.

Fitzroy Square, next visited, was pronounced by Professor Adshead to be architecturally one of the finest in London. It was designed by Robert Adam in 1790 and finished in 1815. It closely resembled some of the squares laid out by the same architect in Edinburgh—Charlotte Square, for instance. The ornament Professor Adshead considered somewhat meretricious; and, being of stucco, in some places it had fallen off. It should, of course, have been carved solid; but stucco had been adopted in order to save expense. Attention was drawn to the admirable practice of taking the railings of

the garden right around without a single break or interruption in the form of a pier or other impediment. This practice, he said, was generally followed throughout the squares of London. Fitzroy Square is symmetrical, or rather it was before the demolition of a part of the north side and the erection of a wholly incongruous building. The effect of this side is completely spoilt, as Professor Adshead pointed out, and unfortunately Fitzroy Square is not the only example of this maltreatment. The hand of the Philistine is everywhere apparent, and vandalism still goes on unchecked. This is particularly apparent in Alfred Place, a thoroughfare running parallel with Tottenham Court Road on the east side. At one time the two ends of the street were terminated by delightful little crescents which have now been demolished. As Professor Adshead explained, the reconstruction of Alfred Place was more or less inevitable, in view of its close proximity to one of the main avenues of commerce; but there was no need for it to be so badly done. The property had become much too valuable for residential purposes; and the unbeautiful warehouses now to be seen were the consequence.

Bedford Square, laid out about the year 1799, was next visited. Particular attention was drawn to the detail treatment of

the doorways, which Professor Adshead pronounced to be some of the most interesting in London. No. 1, Bedford Square, the residence of George Gros-smith, the actor, was designed by Thomas Leverton, who was also responsible for the other houses in the square. The doorway is placed as a central feature, having small niches, containing some excellent ironwork, on either side. No. 36 is similarly designed, the doorway being of Coadé's patent stone, which affords a welcome relief to the rather dull surface of the surrounding brickwork. The arched treatment of the majority of the doorways in the square is particularly interesting, and a good deal of inventiveness is shown in mouldings and architraves. Bedford Square, in common with most London squares, contains a wealth of attractive ironwork in the form of balconies and fan-lights.

Montague Place, with its new front to the British Museum, by Dr. J. J. Burnet, having been inspected, the party proceeded to Russell Square, of which the west side is the only one that remains in anything like its original condition. Russell Square, said Professor Adshead, had met with considerable misfortune. All the windows and balconies had been spoilt by the insertion of terra-cotta frames with small pediments of the same material.

The change is certainly for the worse, and even if it were necessary to make the alteration, a terra-cotta of a more suitable shade might well have been selected. The scale of the square has been completely altered by the erection of the new Imperial Hotel, which at the present time is being further extended. The limit of architectural eccentricity would appear to have been reached by the introduction above the dial of the clock in the tower of a huge grotesque head with eyes that move jerkily to and fro.

Queen Square, Bloomsbury, is another very old square that has been spoilt. Professor Adshead explained that a great alteration had taken place in the surrounding property during the last twenty years. Its value had gone up enormously in consequence of its popularity as a boarding-house area, and a large amount of rebuilding had been carried out, unfortunately not so well as it might have been done. With respect to Queen Square, it is interesting to note that the north side, which, in the reign of Queen Anne, was left open on account of the fine view of the Northern Heights, remains unbuilt upon even to the present day.

A further stop was made at the top of Lamb's Conduit Street for the purpose of viewing the Foundling Hospital, a suggested site for the London University.

Clerkenwell Squares.

Wilmington Square, still further east, stands in a much poorer district. It was laid out about eighty years ago—much later than those which had already been visited; but even here the houses, though plain, possess a good deal of refinement. Many of the squares in this neighbourhood are controlled by the London County Council and are used as public playgrounds. They are much smaller than the more westerly squares, but quite as attractive. The window ledges and balconies of almost every house contain boxes of brilliant flowers, which stand out in delightful contrast to the sobriety of the brickwork. These Clerkenwell squares are seldom visited and remain practically unknown. Northampton Square, which is still further east, shows a simple, straightforward lay-out, with an oval garden in the centre. It is perfectly symmetrical with streets running out at all the angles. Professor Adshead remarked that people were greatly surprised to find so many charming squares in that quarter of London. The existence of so much attractive work of the 'twenties and 'thirties, as contended by the writer of the article on "The Early Nineteenth-Century House" in our last issue, is a direct contradiction of those who would have us believe that architecture came to a dead end after the Georges.

The last square visited was King Square, which lies to the east of Goswell Road. King Square was laid out by Hardwick in 1826, and its most interesting feature is the small church of St. Barnabas on the eastern side. The front elevation consists of a portico with side wings, the houses on either flank being kept quite plain. The composition is very simple; and it is chiefly notable as showing the dignified effect that may be produced with an almost Spartan economy of material.

As will be seen from the foregoing, the tour covered an extensive area of ground; and a more comprehensive study of the squares of London could not possibly have been made during the course of one short afternoon.



MIDLAND HOTEL, LIVERPOOL: A PRIVATE SITTING-ROOM.

R. FRANK ATKINSON, F.R.I.B.A., ARCHITECT.

BRUNELLESCHI'S DOME.

A STUDY OF ITS CONSTRUCTION.

THE erection of the Duomo was commenced within a few years of the close of the thirteenth century, from designs by Arnolfo da Lapo. At the time of his death, A.D. 1300, the work had not been carried higher than the springing of the vaults. Toward the erection of the dome no steps were taken until A.D. 1407, when an assembly of architects and engineers was convened at Florence to discuss the question. At this conference the idea of raising the dome on a drum was first introduced by Filippo Brunelleschi, who had long been meditating a scheme for its completion. Failing to agree, the conference separated without any practical result. Several years later the question was reopened by the authorities again seeking the advice of Brunelleschi, who suggested another convention, to consist of leading native and foreign architects. This assembly met at Florence, A.D. 1420, when Brunelleschi fully detailed his scheme, and the authorities, having no better before them, requested him to furnish a report in writing. This was done, the architect explaining, with great minuteness, the design which was eventually carried out. This document—which has fortunately been preserved, and will be found an invaluable aid to an intelligent study of the structure—obtained for its author the commission for which he had long laboured. But it was, even then, hampered with humiliating conditions: (1) That he must not proceed beyond a certain height without the further sanction of the authorities; and (2) that, even during this portion of the work, he would not be entrusted with the sole control; for, at the instance of certain influential citizens, Lorenzo Ghiberti, the sculptor, was appointed as joint architect. The incompetence of the latter, however, became so patent as the work proceeded, that he was relieved of all responsibility, and Brunelleschi was appointed chief architect for life.

Thinking it probable that he might not live to see the completion of the work, he prepared, in 1434, a model, and specifications for the lantern, inserting in his will instructions for its erection accordingly—in case of his death. When that event took place, the lantern had been carried to a height of several feet, and most of the stone prepared for the remainder.

Not until the year 1461 was the topmost stone of the lantern laid, and on this Andrea Verocchio erected a ball and cross, which, being thrown down by lightning in 1601, were afterward replaced by those now existing.

Governing Factors in the Design.

The conditions on which the dome is based have little in common with those attaching to an ordinary dome. The latter is generated by the rotation of an arch on its vertical axis, when the section, taken in every direction, will be exactly the same, and the thrust uniform all round. But in this dome, springing as it does from an octagon, each of the sides is, so to speak, a portion of a separate vault, and exerts a distinct and independent thrust. Consequently the dome lacks that coherency and strength which are associated with the circular plan, and the problem was how to give to the structure the necessary stability while retaining the octagonal form.

Another equally important factor is the lantern. From a report made to the

Building Committee before the commencement of the dome, we are enabled to know that in his selection of the pointed form of arch in preference to one of semi-circular section, Brunelleschi was mainly influenced by the hope of securing adequate support for this additional feature. He points out that if the dome were turned in a semi-circle, the great extent of the crown would certainly cause it to give way when the lantern was placed in position. "I have, therefore, determined," he continued, "to adopt the proportion and manner of the pointed arch, so that, when loaded with the lantern, each part will help to give stability to the others." This is perfectly in accord with the well-known fact that the tendency in a pointed arch without surcharge is to break up by rising at the crown and falling in at the haunches. And though this may also hold good of a dome of polygonal plan, it is evident that it does so to a far less extent, by reason of the lateral pressure at the angles.

The original tendency of such a dome is, by the superadded weight of the lantern, more than counteracted; the opposite tendency—an actual bursting pressure—being thus generated. The point at which the greatest force is exerted must, of course, depend on the pitch of the dome; the higher the pitch the less will be the thrust, and the lower the point of greatest weakness.

In a dome of circular plan and of uniform thickness, if its radius, drawn to the vortex, make with the vertical an angle of $22\frac{1}{2}$ degrees—as in the example under

notice—its inherent thrust will be greatest at a point making with the horizontal an angle of $13\frac{1}{2}$ degrees. And though the great Florentine dome lacks the first of these conditions, the expedients adopted with a view to its security bring it very nearly under the operation of the laws which govern an ordinary dome.

The Octagonal Substructure.

With reference to the substructure, it is worthy of remark that the octagonal plan here adopted possesses a decided advantage over the square, in that it admits of double the number of supports, and affords facilities for abutment at all points. Thus the idea, partly acted on in Sta. Sophia, of extending the building on all sides in order to secure an equilibrium of forces round the central structure, is here fully carried out.

The octagonal space covered by the dome has a diameter of 138 ft. 6 in. Four of the sides are open to the main extensions, and spanned at the height of 100 ft. by semi-circular arches of 50 ft. span and a depth of 16 ft. To resist the thrust small adjuncts are built against the intermediate sides of the octagon, which, on the west, are pierced obliquely by comparatively narrow archways, whereby the aisles of the nave are continued to the central area.

This arrangement has the effect of reducing the supports at the western angles to two detached piers, which receive the arches of the nave arcades. Being thus surrounded by buildings, the central octagon possesses, in its walls and vaulting, a complete system of abutment to the height of 135 ft. From this level the dome was to have sprung, according to the intention of the original architect; but his successor, believing the abutment sufficient for his project, carried up the



THE DUOMO, FLORENCE.

wall to the further height of 40 ft., thereby emancipating the structure from the manner of all preceding examples. This additional storey is analogous to the tambour, or drum, of later domes, of which, indeed, it may be said to have been the prototype. It not only relieves the supporting arches of the direct horizontal pressure of the dome, but also affords increased facilities for lighting, and gives great additional prominence to the structure.

The wall of the tambour is 16 ft. thick, and on each of its sides is pierced with a circular window, 14 ft. in diameter. This space for the admission of light is small in comparison with that provided in domes of more recent date; but, seeing that the full force of the twofold pressure is borne by the tambour alone, unaided by counterforts, the conservation of the strength of its walls was an absolute necessity.

From the wall of the tambour, at the height of 178 ft. from the floor, the dome springs, rising to the additional height of 118 ft. In the various methods adopted for imparting to this octagonal vault, so far as possible, the structural qualities of a circular dome, may be found material for an interesting study. To bring about the desired result, the eight distinct sides must be so united, or conjoined, as to form one compact, coherent, and self-sustaining whole, which should also be able to support the lantern.

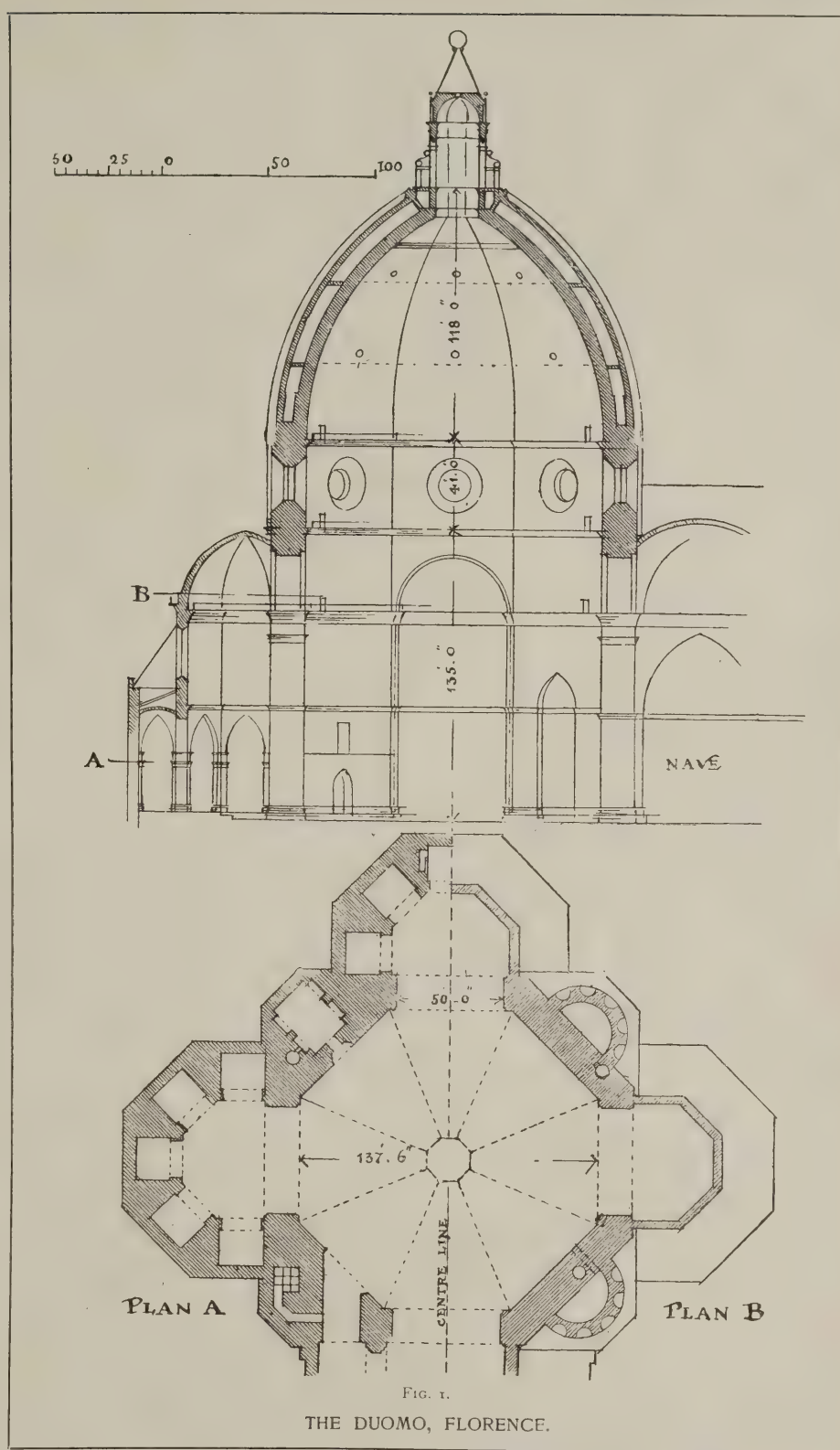
In the first place we cannot fail to admire the judgment and skill of the architect in giving to the dome its cellular structure. By this apparently simple expedient he successfully attained the necessary degree of lightness, without any sacrifice of the requisite mass and strength.

Some Dimensions.

The total thickness, which is nearly uniform, is about 14 ft., and to the height of 10 ft. from the base consists of solid masonry, the two topmost courses of which are long plates of hard stone, laid transversely, thus forming a firm bed for the dual dome. From this point to the further height of 15 ft., the inner vault has a thickness of 7 ft., and for the remainder of about 6 ft. At the angles, and occupying the full depth of the cavity and passing through both vaults, are eight ribs of stone, which diminish in width from 9 ft. at the bottom to 2 ft. at the top. On each of the sides are two other ribs, less in width, but otherwise similar to those at the angles. At short intervals from the level of the second gallery, transverse arches or buttresses, at right angles to the vaults, spring from the main ribs, and, spanning the space occupied by the two intermediate ribs, tie the whole together and secure the outer vault (Fig. 3). At the top the ribs are received by the walls which circumscribe the central opening and support the platform for the lantern.

The Cellular Mode of Construction.

It will be seen that in the cellular mode of construction here adopted the disposition of material is somewhat on the principle that obtains in constructional ironwork, the ribs serving to stiffen the vaults and to restrain any tendency to open at the angles owing to pressure exerted by the lantern. The rapid decrease in width of the ribs generally in their ascent may also be regarded as an ingenious application of the principle which forms the basis of the abutment system. Yet the most important element in aid of the support of the lantern is, without question, the high pitch of the dome, combined with its great relative thickness. But with a



view to greater security a strong belt or chainwork, consisting of beams of chestnut laid in the space between the vaults and passing through the counterforts, engirdles the inner vault at a level near to what would in a circular dome of the same pitch be mathematically its weakest part (Fig. 4).

The outer shell is by no means indispensable to the stability of the dome; it serves rather as a covering to the system of counterforts. Its greatest thickness is about 3 ft., which slightly diminishes in the ascent.

The passages which surround the octagon in the cavity between the vaults have their floors supported on ribs built

into the vaults at each end, and thus impart additional strength to the structure.

The small circular apertures in the inner vault, with recesses opening from corridors, were provided with a view to the suspension of scaffolding for the fixing and the repairing of the mosaic with which the interior surface is covered. Similar openings in the outer shell serve for the admission of light and air into the cellular spaces. (It may be mentioned that in the erection of the dome centering was altogether dispensed with, and no framed scaffolding was used for the first 50 ft.).

The ribs are constructed entirely of stone laid in radiating courses, and the

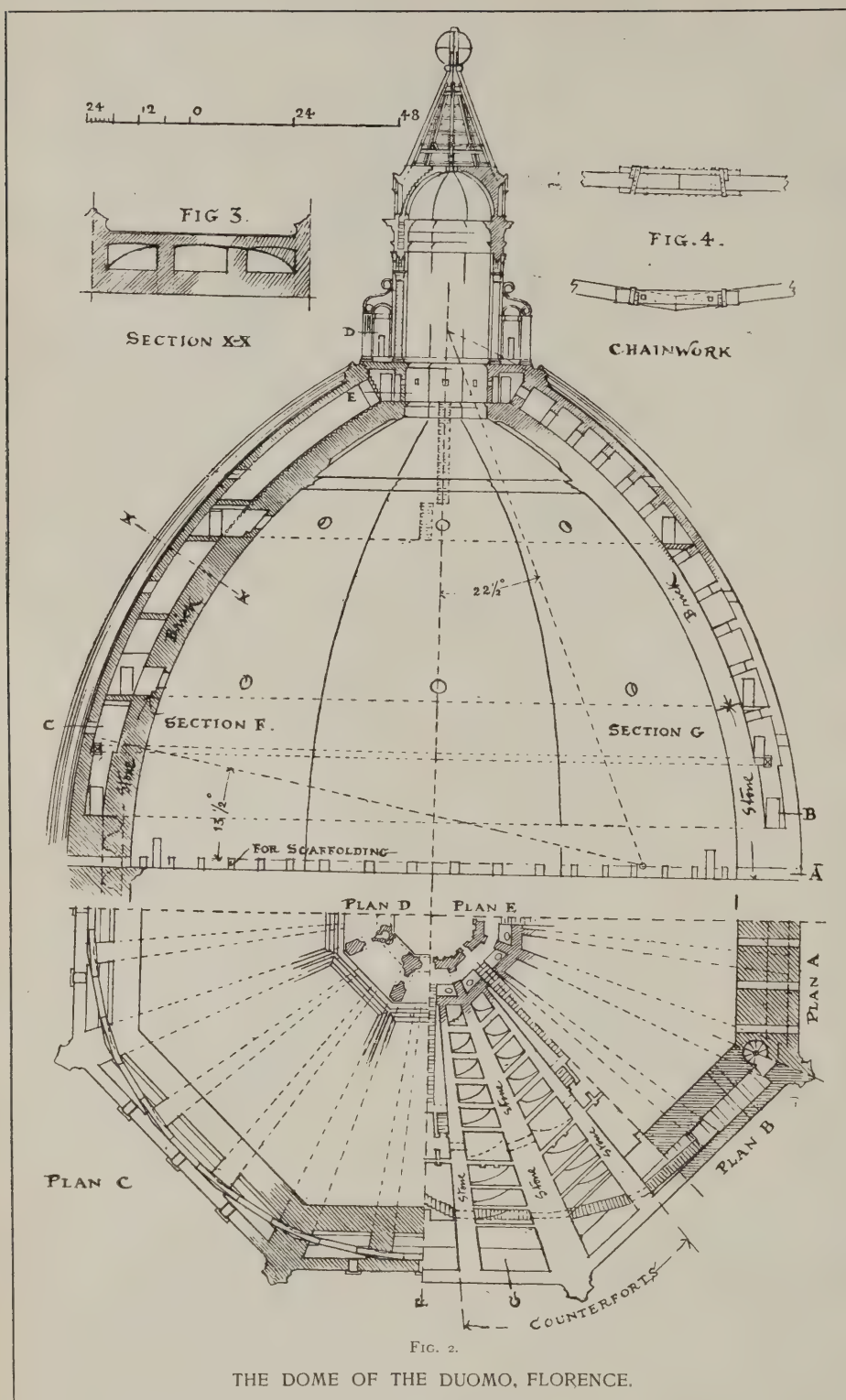


FIG. 2.

THE DOME OF THE DUOMO, FLORENCE.

two vaults are of stone up to a height of about 40 ft., the remaining portions being of brickwork to limit the weight.

On the exterior the dome is covered with tiles, though the original intention was probably to face it with marble, but the only portions so completed are the moulded ribs, which give prominence to the angles, thus bringing the lantern into closer harmony with the rest of the design.

The Lantern.

Following the octagonal plan of the central aperture, the lantern has an internal diameter of about 20 ft., and, including the cupola, a height of 45 ft. This portion is wholly of marble. It is capped with a conical roof of timber, covered with lead, which supports on its

apex a metal ball and cross, making the total altitude from the floor about 385 ft.

The skill shown in the methods employed for restricting the weight, while preserving an effective outline, and also in the arrangement of the supports, whereby the weight of the lantern is brought to bear directly on the main counterports, is worthy of the highest praise.

The fractures—due, as is generally supposed, to settlement—which appeared in the dome about 200 years after its completion, having been secured with dove-tailed cramps, did not extend beyond their original limits. The partial subsidence of the foundations, to which they are attributed, may, in its turn, have been caused by the excessive weight of the superstruc-

ture, in combination with the unequal disposition of its supports. Yet, though in these respects the dome of the Duomo may somewhat unfavourably compare with other well-known examples, the novel system adopted in its construction must be said, upon the whole, to have successfully stood the test of time.

Missing Features.

It is greatly to be regretted that a structure so conspicuous amid its surroundings should be marred by the incompleteness of one of its most important features. This has reference, of course, to the absence of the cornice, with galleries, round the top of the tambour, on the exterior. These, which formed part of the original design, would certainly prove a valuable acquisition to the building; and their addition, even after the lapse of nearly five centuries, would be a fitting, though tardy, tribute to the memory of its great architect. But even in the absence of these, he is justly entitled to the eminent distinction of having prepared the way for what has been termed "the modern type of dome," as exemplified in the masterpieces of Michael Angelo and Wren.

CARTHAGE DISAPPEARING.

The last vestiges of ancient Carthage are rapidly disappearing before the vandalism of builders and property owners who cater for the well-to-do French, Italians, Greeks, and Arabs of Tunis, and the pillage fills French archaeologists, artists, and historians with grief and indignation, especially as France holds a protectorate over Tunis. In the seventeenth century travellers testified to the magnificence of the ruins of Carthage, ruins which showed both Roman and Byzantine features, for after its destruction by the Romans in the year 146 B.C. the famous city was colonised by them, and ultimately passed under the rule of the Greek Emperors who reigned at Constantinople. Its final downfall was effected by the Saracens in 697 of our era. But in modern times two younger towns, Tunis and Goulette, rose beside the dead city, which they pillaged to provide material for their expansion. The great mosque of Tunis, for example, has 150 columns taken from Carthage. Many private houses in Tunis are built of marble from the same source, which has also yielded material for the aqueduct crossing the Bardo Road. The fort of Goulette was rebuilt in 1535 with vestiges of the illustrious town, from the marbles of which Italian ships at one time took return freights, using parts of Carthage as mere ballast. There is a new Carthage not far from the old. Its hotels, villas, and other buildings are formed of the debris of pagan temples and Byzantine basilicas, and to build the Palace of Dermech the ancient forum was broken up. In 1904 a whole district of the venerable city, ruins included, was sold for five francs the square metre. The next year a similar operation took place. Nothing remains of the colossal marble staircase that was seen and admired as lately as 1884, nothing of the Temple of Astarte. The mosaics have either been wantonly destroyed by the fellahs or taken away and sold piecemeal, and if any beautiful bits remained travellers sacrificed them to the taste for souvenirs. Since 1882 many efforts have been made to protect what was left of the remains, but only the French Government can take effective action. In view of the interest of the fragments, it is to be hoped that some such action may yet be taken.

SCOTTISH ARCHITECTURE AND "THE BLUE BLANKET."

There exists in Edinburgh apparently a periodical which glories in the name of "The Blue Blanket." One of its objects, so we may judge, is to uphold the claims of Scottish architecture, and that it is very earnest in this trust may be seen from the extracts here given from an article on "Architecture and the Royal Scottish Academy" that has been reprinted, in pamphlet form, from its pages.

The Royal Scottish Academy of Painting, Sculpture, and Architecture was founded in 1826 to encourage the practice of the Fine Arts in Scotland, by showing the Public representative Collections of Works mainly by Scottish Artists of the time."—Opening paragraph of the Introduction to the R.S.A. Catalogue.

THE recognition of architecture by the Royal Scottish Academy has never been an easy matter, nor indeed can it ever be so to any institution founded mainly for the encouragement of easel paintings, for it is plain that the "works" of architects cannot be exhibited in the same way as pictures, and, in consequence, more or less competent drawings of these works must be substituted. But architects are not trained to represent the buildings which they produce, and such drawings are usually the work of professional architectural draughtsmen; they are lacking in any of the finer qualities of a picture, and are naturally quite uninteresting to the general public. Something was gained when photographs were admitted to the walls, but even the lure of photographs has not yet induced the public to regard the architectural room as suited to any purpose excepting repose.

Since the Academy entered its new galleries a change has come over the Architectural Room, with results which a local society paper this year characterised as "more attractive." Such praise is indeed unusual, and, as this year's exhibition shows the fullest bloom of the new policy, it cannot be passed over without comment.

Two Methods of Arrangement.

An architectural exhibition may be arranged on two principles. We may aim at interesting and edifying either the architect or the public. In the first case we shall exhibit technical architectural drawings, showing clearly the design and construction of the buildings, together with photographs showing their appearance when finished. An exhibition of such working drawings, including both actually executed work and designs or schemes for suggested work, would be of great interest to architects. The public would not understand very much of it, but those of them who looked at it would at any rate see the architects' work.

If, however, we desire to interest the public in architecture, we shall have to confine ourselves to representations of the buildings. The problems of construction and the technique of architecture do not interest the public. They are concerned with the end attained, not with the means, and the exhibition will consist of photographs, models, and drawings, but these drawings must be real representations showing the buildings with as great a verisimilitude as possible. They are not exhibited as works of art in themselves, but as representations of works of art, and a faithful rendering of light and shade, of perspective and atmosphere, is essential. Such drawings can only be done by men trained in the interpretation of natural effects.

Though drawings of this character are to be found on the walls of the Academy, they are not in the Architecture Room, and it should be deliberately stated that architects are not capable of them. The

appreciation of natural effects and its transference to canvas or paper is not architects' work. It requires a long and difficult training—the training of a painter—and it is not altogether desirable that architects should be required to undergo it. Their own art is difficult enough, and although an architect may very suitably interest himself in painting or draughtsmanship, yet it is as a designer that he will live.

Architectural Drawings and the Public.

The proper scope of an architectural drawing is hardly appreciated by the public. It is not a representation of the building. It does not profess to show the mass, the light and shade, or the colour of the building. It shows none of those qualities which impress us when we look at the building. It is simply a document, or a letter of instruction, written in a kind of shorthand, giving directions as to how the building is to be erected, which can be read only by those who have learnt to understand its language. No building can ever be seen, as an architect draws it, in plan and section. No building can ever be seen in flat elevation, without colour and texture, without perspective or foreshortening, and with every detail outlined by an edge of equal intensity; yet to one trained to read it, no representation can give so much information as that letter of instructions which we call an architectural drawing.

The making of such drawings is not art, or at any rate not "fine art." The art lies in the design of the building, and the architect's draughtsmanship is no more to be praised than is the poet's penmanship. It is, unfortunately, true that an architect is still sometimes spoken of as "quite an artist," because he dabbles in water-colour, but this is a view which recent years have done much to correct, and which it is the duty of the Academy to combat. Let us now turn to the exhibition.

On a first survey of the room the anxious inquirer may well ask,

"Where is Scottish Architecture?"

Those enormous sheets which occupy the principal places are French. Let him examine more closely and, hanging round the skirts of the French exhibition, he will find nineteen small frames by Scottish architects. The profession, as is well known, is shy and retiring; shyest and most retiring of all are the Scottish Academicians. They do not exhibit at all. The Associates are more daring, and three of their number have ventured to contribute. To them, and to the outsiders who have rushed in (to the number of twelve) where R.S.A.'s fear to tread, all credit is due, but their work is hardly visible. The walls are so dominated by the immense size of some of the French exhibits that nothing else is to be seen. There are eighteen of these, two of them are about twelve feet square, one is some fourteen feet by four feet, and there are others of large size. They occupy the most prominent places in the room, and completely dwarf everything else.

The view of the Academy appears to be that Scottish Architecture is in so deplorable a condition that it is not fit to take a place on the walls of the Royal Scottish Academy, even if by Academicians. Something must be got from "abroad," that home of art, to show us what architecture is. This year it is France, next year it will be Germany, or Turkey, or anywhere that is not Scotland.

It is no doubt the destiny of Scotsmen to inherit the earth, and we are now being taught the qualifying virtue. The Academicians are wise men, and we have much to learn from France. They have no doubt procured the best that France can offer, and we must at least set ourselves to learn what we can from the really very carefully executed drawings set up for our instruction.

Insignificant French Work.

The principal exhibit consists of a scheme for the restoration of the Church of St. Andrew at Chartres by Professor Raoul Brandon. Two elevations, each about twelve feet square, and a large internal view are hung. St. Andrew's is an almost unknown and very much ruined little church of the twelfth or thirteenth century, of no great interest. It is known that in the fifteenth and sixteenth centuries a choir, chapels, and other additions were made in the semi-mediaeval style of the period. These were carried on a bridge across the stream and may have been very beautiful, but, excepting for parts of the foundations, they have entirely vanished. Professor Brandon's restoration shows a complete building covered with elaborate detail, for nine-tenths of which there can be no historic authority. From the drawings it is impossible to tell what is old and what is restored, for, it must be written, no distinction whatsoever is made in the drawings. They are, in fact, a scheme for rebuilding the chapel in a style dead five centuries ago, and not in any sense a reconstruction of the old building. . . .

Equal in importance to these is a large strainer with measured drawings of the chapel of Rocamadour-Camaret at Finistère. The chapel is carefully drawn, and here, at any rate, we have proof that the French architects do study their old buildings, for plan, sections, and elevations are fully given; but the building itself is of no importance. It is a little chapel of the fourteenth or fifteenth century, far inferior in interest to the churches at Leuchars or Dalmeny, and quite unworthy of its enormous strainer or of its prominent place.

The Academy does not permit the exhibition of copies of masterpieces by deceased painters, however eminent. What excuse have they for exhibiting a copy of the work of a deceased village mason, even if French?

In truth the Academy seems to be under the impression that an architect's business is to draw neatly. They have obtained the neatest and most elaborate drawings they could get in France, and these they offer us in the name of architecture. Is the Academy really under the delusion that these exercises in academic draughtsmanship represent French architecture? Apparently so, for the modern architecture which has made France famous—the theatres, the railway stations, the hotels, and the public buildings—is represented only by two small photographs of the School of Medicine at Bordeaux by M. Pascal. A few clever sketches of French domestic work are added to edify a nation whose domestic architecture is in advance

of all Europe; the public work, which we might well study, is absent.

A Final Word of Advice.

There is architecture in Scotland, and it should be represented in the Academy. Amongst the few home exhibits are examples which show the steady growth of a healthy school, but no criticism or appreciation of Scottish architecture can be founded on this exhibition. Let the Academy take one-half the trouble to get good contributions from Scotland that they now do to get bad ones from abroad and we shall see a change on these walls. So long as the present policy continues it cannot be expected that Scottish architects will contribute drawings to be squeezed into corners by invited works, and it is sincerely to be hoped that they will not degrade their art by emulating such efforts as are shown this year.

ENQUIRIES ANSWERED.

The Stamford Grey Tile.

With further reference to the inquiry published under the above heading on page 176 of our issue for August 14th, a correspondent directs our attention to the imperishable "Stamford stone" roofing tile made by Williamson Cliff, Ltd., Brickworks, Stamford. This is a grey tile, varying from dark to fine shades of medium and lighter grey, and it is claimed by the makers to be durable and hard without being brittle.

Cost of Schools.

Christopher writes: "Please say where figures may be obtained showing the cost of schools, (a) elementary, (b) secondary, and (c) any other type, per head, exclusive of cost of site."

The Board of Education Departmental Committee's report, Cd. 5534, Eyre and Spottiswoode, price 6d., on the cost of school buildings, will give the answers to queries (a) and (c). With regard to secondary schools, the accommodation plays an important part in deciding an average cost per head. It is obvious that a school for 100 students with all the special apartments would cost much more per head than a school accommodating 250 students, with the same number of extra rooms. Therefore, the fairest way is to work it out at the cost per room, etc. The following costs are based on priced quantities taken out separately for each apartment, etc., and provide only for common brick walls, wood windows, stone sills, slate roofs, etc., externally, and plastered walls finished with wood skirting, dado and picture rails in all cases, except the hall, laboratories, cookery rooms, cloak rooms, lavatories, corridors and staircases, where the walls are taken lined to a height of 4 ft., with glazed brickwork; solid and suspended concrete floors, etc., finished with wood block and granolithic internally. Class room for 30, 25, and 20 students, £7 to £9 per head; laboratories, £12 per head; art rooms, £11; cloak rooms, £1 10s.; lavatories, 15s.; cookery rooms, £26; manual rooms, £25; dining rooms, £8 per head; assembly hall (60 ft. × 30 ft.), two stories high, £900; corridors, £8 per yard, lined, 6 ft. wide; open corridors or covered ways, £5 per yard; staircases, £150 each; heating chamber, £130; conveniences and approaches, £1 per head; library (18 ft. × 15 ft.), £180; gymnasium (35 ft. × 20 ft.), £350; master's room (20 ft. × 15 ft.),

£195; main entrance and lobbies, £100; side entrance, etc., £15. This will give the cost of a very plain building, and it is desirable to add from 5 per cent. to 7½ per cent. for architectural work. The above amounts have been determined for a building erected on a level site with foundations finishing 4 ft. below ground level. The costs do not include heating (10s. per head), lighting, water supply, boundary walls, playgrounds, laying out of grounds, etc., which will vary as to the site and locality.

C. A. E.

Garage Paving Material.

Subscribers (Leeds) write: "Kindly name a suitable material for finishing the surface of the floor of a garage designed to hold about four cars."

—Probably the most reliable material for the floor finish of a motor house is granolithic paving laid to falls. Cement alone is sometimes used, but the action of the dropped oil on its surface tends to make it spongy, and sometimes affects it so much that it may be scratched up with the finger nail. In good granolithic a very large portion of the surface consists of stone chips, which for this purpose should be of very fine gauge to ensure a smooth surface should the cement become devitalised, when coarse gauge chippings would leave a deeply pitted and roughened surface. Stone flags make a good floor in some respects, but their use involves danger from sparks due to steel-shod tyres, and if laid with a space beneath, the accumulation of explosive gas from leakages is possible. Wood and bricks are rather absorbent, but some of the patent composition floorings have been successfully used, though others apparently similar have failed badly. In the event of using a floor of this type, a previous one for similar purpose should be sought and inspected before making choice.

G.

Pantiles in Exposed Situation; Joinery Preservative; Construction of Rubble Tennis Court.

E. E. B. (London, S.W.) writes: "(1) Please give a specification of an inexpensive method of covering a roof with pantiles in an exposed situation near the sea."

"(2) Please inform me of a satisfactory method of preserving timber joinery, etc.—both external and internal work. After treatment the wood should appear untouched, the grain remaining visible."

"(3) Kindly give me some information with respect to the method of laying out a rubble tennis court."

—(1) A better method than sheet lath and plaster for receiving a pantile roof-covering is as follows: Cover the roofs with ¾-in. rough deal boarding and lay on same Willesden one-ply green underslating lapped 2 in. at joints in the direction of flow. (Note.—Boarding may be omitted and two-ply paper laid direct on rafters if desired.) Provide and fix 2 in. by ¾ in. deal fillets or counter-battens spaced similarly to rafters and nailed to the boarding from eaves to ridge, and above same similar 2 in. by ¾ in. battens set out to the gauge of tiling. The pantiles to be English hand-made pantiles with nibs and nail-holes. Lay same to 3½ in. head lap and 2 in. side lap, each tile bedded at the head as laid in a small fillet of lime and hair mortar and nailed with one 2 in. copper nail. Point up side laps at completion with cement and sand and form cement fillettings at all parapets and rakes with necessary plain tile oversailings and flashings.

Cover the ridges with half-round ridge tiles bedded at joints and pointed in cement and fill up below same between wavelaps of tiles with neat packing of plain tiles in cement.

(2) Any of the advertised wood preservatives should prove suitable. Though hardly giving an appearance that the wood is "untouched" they leave the grain perfectly visible and form a good protection, particularly if the work to be treated can be *dipped* in the solution, so that it may strike well into the wood. Write Messrs. Pinchin, Johnson and Co. for particulars of "Fencol," Messrs. D. Anderson and Son for "Sideroleum," Messrs. Major and Co. for "Solignum," Messrs. C. A. Peters, Ltd., for "Carbolineum," and Messrs. Joseph Dee and Sons for "Jodelite"; from these a suitable material to meet the needs of the case can be chosen.

(3) In the construction of a rubble tennis court the ground should be levelled over an area of 120 ft. by 50 ft. and thoroughly drained, then a layer of rough brick rubble or clinkers 4 in. to 6 in. thick should be laid over the ground, and this in turn should be covered with a layer of broken brick rubble to pass through a 2 in. sieve. The top layer should be kiln dust or hard engine ashes about 1½ in. thick, thoroughly rolled and consolidated. The kiln dust can be obtained from any brickfield by arrangement. It is advisable to provide grates for carrying heavy rainfalls, though if the court is properly constructed these are not absolutely necessary. The drains underneath the rubble should be filled with rough material to ensure the quick passage of water from the court.

X.

DUCHY OF CORNWALL'S CLEARANCE SCHEMES.

The active measures which are being taken by the Council of the Duchy of Cornwall to modernise the estates of the Duchy in London are attracting much attention. Considerable progress is being made in the neighbourhood of the Oval on the Kennington estate, which forms the most important portion of the property of the Duchy in London. In the Kennington Road district many of the older workmen's cottages have been demolished, and new ones are springing up in their place. But the changes at Kennington are of less general interest by comparison with what is being done to transform the Stamford Street estate on the riverside below Waterloo Bridge. The houses of the once fashionable area of the period of the Georges, where Rennie lived, and in the neighbourhood of which Rowland Hill established his chapel with eight sides—so that the devil might not have a corner in which to lurk—have outlasted their time. From the Waterloo Road end to Cornwall Road, and from there to Exton Street they are already doomed and in process of demolition. What is to be done with the site shortly to become vacant, or how much further the clearing operations will extend, are matters still open to consideration. Offers of various kinds have been received by the Council of the Duchy, including proposals for a large hotel, but no definite plans have been formed.

On the river side of Stamford Street the Duchy has leased a large plot of cleared ground to the Commissioners of Works, and upon this site the new Stationery Offices, to supersede those now in use in Princes Street, Westminster, are in process of construction under the supervision of the Office of Works.

PHASES OF ARCHITECTURAL
EDUCATION.*

BY LLOYD WARREN.

How interesting it would be could we follow the phases of architectural training through the middle ages. How inspiring it would be to us, who seek to perfect this training at the present day, if we knew the influences which raised the art from the crude barrel vault and block capital of the early Romanesque to the tenuous stone construction and the florid carving of Troyes and Notre Dame de Brou!

The Mediæval Builder.

Nothing, however, is left to give us a hint as to how the science of the builders was transmitted from generation to generation in those days. The mediæval master builder has passed away and has taken his secret with him; scarcely a document has remained, and nothing to inform us of his educational system. The builders before the Renaissance were a vast secret association, living and working apart from the rest of the world; migrating in companies when one cathedral was finished to the site of another which was beginning, guarding their secrets jealously, mystic and tenebrous as was the age wherein they lived, and with that age they melted away before the brilliant rays of the Reformation and the Renaissance.

The Renaissance.

Then came the age of the despots, the literati, and the precious; the pagan worship of the purely beautiful, which thrust aside the expression of construction as a thing inelegant and barbarous, and summoned the artist of pure form to build its temple. Aeneas Sylvius and Filippo Strozzi thus called for the services of the sculptors Rossellino and Benedetto da Majano, and for nearly a century after only sculptors and painters occupy themselves with the design of monumental edifices. Then Palladio and Serlio codify the science of building design in such a way as to put its technique within reach even of the inartistic constructor; unfold, as it were by machinery, the secrets of the artist's magic of form and proportion, and create that phase of architectural education which with little change has come down to the present day.

Thus we may describe these phases from the time of the downfall of Rome—traditional through the middle ages; purely artistic through the Renaissance; and codified or systematised thereafter.

Intensive Specialisation.

That this last phase still exists in Europe I believe, but in America we are rapidly developing a new one which we cannot but recognise; it is that of intensive specialisation. The elements which now enter into the profession of architecture are so vastly complex that it is virtually impossible for one man to master them all—think of them for a moment. Is it only necessary that one be a man of general culture, a man of affairs and a gentleman for the public to hasten automatically to one's office? If we would not have important work slip through our fingers we must be so eminently men of affairs that affairs must occupy the larger part of our time to the neglect of many other things, and those chiefly artistic. I think you will not cavil if some one insists that we must also be scientific, and you know how absorbing is

the science of modern construction. Then what place in all this is left for art? Shall architectural design never be anything but Palladian colonnades; shall decoration and ornament be ever at the mercy of some clay-puddler in a modeller's shop?

Imitation or Creation?

In short, what part is art playing in our profession? Is it merely one of those confounded things after another of which it is said the American's life is composed? Is it forever to consist of different copies of the splendid motives which Letarouilly has put within our reach, or in touched-up reproductions of the rather mediocre designs of modern European publications? Do you suppose that this great land of ours which has produced eminent statesmen, writers, orators, and soldiers, cannot also bring forth its Albertis and its Sansovinos? And if they come along, what are we going to do with them; give them their pay by the week, and, as Mr. Cram has said, "force them to sketch themselves into a grave of watery deliquescence?" What part shall the artist play; shall it be a chief and honourable part, or shall it be that of the salaried, and, therefore, not independent draughtsman? There can be but one answer to this: the place of the artist in the practice of architecture should be second to no other, and to this artist should be opened an education which will enable him to assume that place.

Our architectural schools up to the present have refused to accept this phase of intensive specialisation; twenty years ago they differentiated themselves very little from the schools of civil engineering; to-day they will decline not to differentiate the scientific from the artistic in the profession itself, and though in the scientific branch the instruction is excellent, in the artistic it still leaves much to be desired, and students are not encouraged to choose one or the other on which to concentrate.

The Age of the Specialist.

The realisation that we had unavoidably passed into this educational phase of intensive specialisation came to me only very recently. It had been my fond notion that all draughtsmen had the ambition to become all-round architects, and ten years ago I had urged Columbia University to open a night school with that end in view. Being unable to pass this measure through at that time, it was with great interest that I saw Columbia last year, at the instigation of our Commission on Education, establish extension courses, which, taken in conjunction with the problems in design of the Society of Beaux Arts Architects, would give a complete course in architecture. Imagine my surprise then when I found that, though the extension courses were well filled, only two of this society's students were enrolled in them. All these boys were studying to specialise, each one in some one branch of architectural practice.

And after all is not this quite right? Do we not need in our offices men highly trained in each of the widely differentiated branches? The sanitary and ventilating experts each up-to-date with the ever-improving apparatus; the writer of specifications, keenly alive to every new advice for good and economical construction; the landscape gardener with a minute knowledge of plants and trees to protect the client from the florists' extravagances.

Artisan and Architect.

All this we are producing, but what is horrible is that we are rapidly producing, too, an artisan designer who in knowledge of plan and of composition excels the

architect, his employer! Just stop a moment to realise what this means; the architect, that is, the man of culture, of affairs and the gentleman, is ceasing to be the artistic inspiration of the work signed by his name, and soon the architect's office will be the mill, run by a business man, where art occupies a nameless and salaried position. The result of such a condition may have the quality of opportunism, but surely, where the artist is not in authority, his work can never rise to genius.

To my mind there can be but one escape from this condition, and that is, to give the man who bears the promise and has the chance of being an architect, advantages of artistic training which the night school man does not get. At present his training in this is vastly inferior.

Artists, not Draughtsmen.

We cannot manufacture geniuses, but we can give them opportunity to develop. We cannot develop the genius simply by the T square and triangle; his every æsthetic instinct must be aroused and given play. Rossellino and Benedetto did not produce the marvels in Pienza and Florence because they had technique in architectural drawing but because they were *artists*, primarily sculptors, and who knows whether they were either gentlemen or men of affairs?

And so I speak to you earnestly to-day to urge that everywhere, where the higher education of the architect is aimed, that it be not restricted to that of the draughtsman, but that he be trained in the practice and observation of the beautiful through every medium.

The technique of architectural drawing is all very well, the principles of planning and the composition of facade are essential; but what is of overwhelming importance is to offer to the genius who may arise the possibilities of developing himself by practice in the three allied arts. Our universities must admit plastic art in their curricula; they must realise that the artistic side of our profession can only be developed in an art school, or America to the end of time will unfeelingly and without understanding reproduce Palladian colonnades and eighteenth century ornament *ad nauseam*.

"ACADEMY ARCHITECTURE."

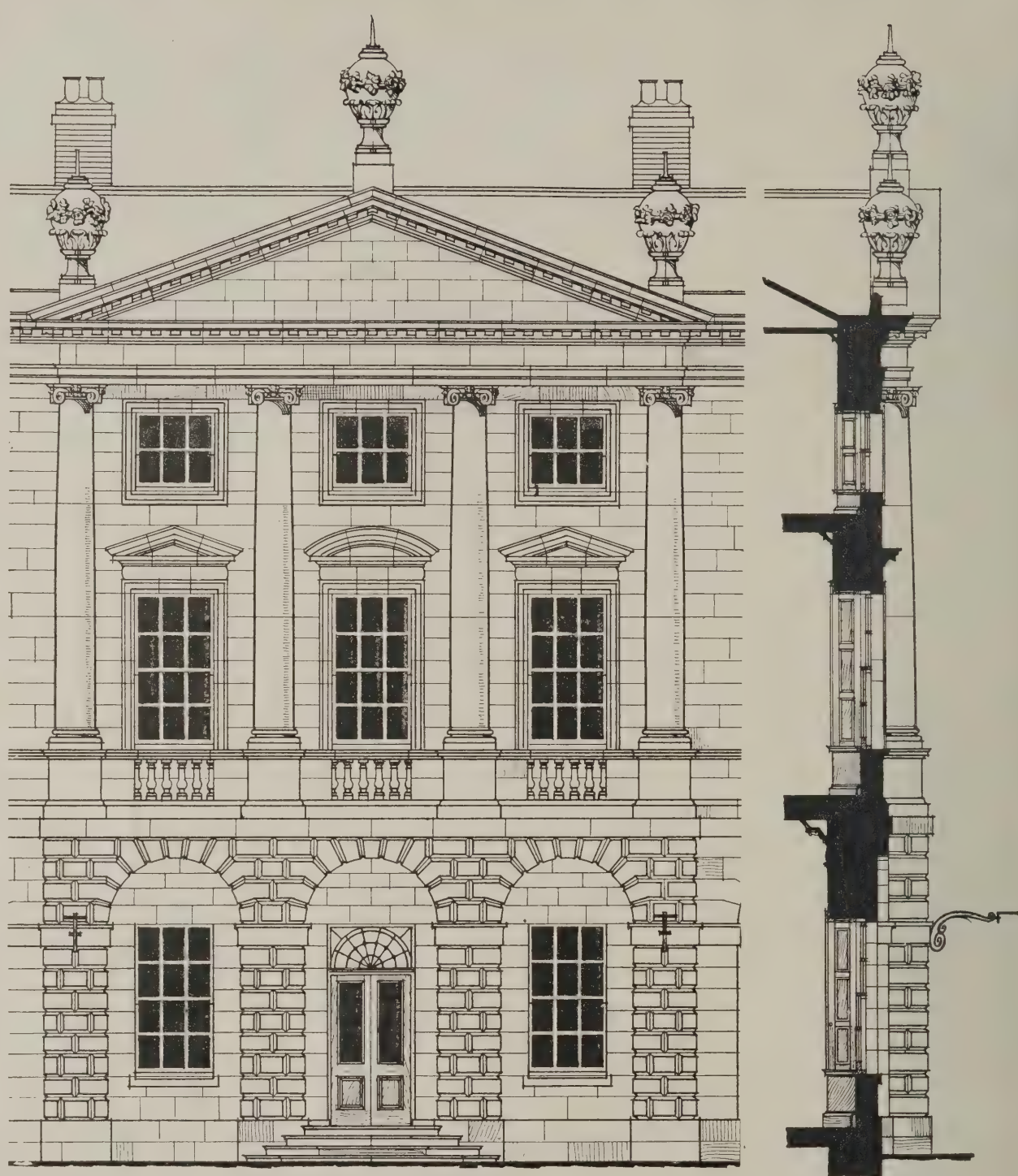
"Academy Architecture" is an excellent illustrated record of the yearly exhibitions at Burlington House, and all architects like to have the volume on their shelves. The first part for 1912, vol. 41, has just come to hand. Like its predecessors, it is admirably printed, and the perspective views are supplemented by plans, which are frequently absent at the Academy. Two colour plates are included, of a water-colour of St. John's Chapel at the Tower, by Mrs. Alex Koch, and of a house in Yorkshire, by Mr. Ernest W. Marshall. The publishers of the volume (paper cover 4s., bound 4s. 10d.) are Messrs. Alex. Koch and Sons, 58, Theobald's Road, W.C.

DETAILS—OLD AND NEW.—L.

St. Helen's House, Derby.

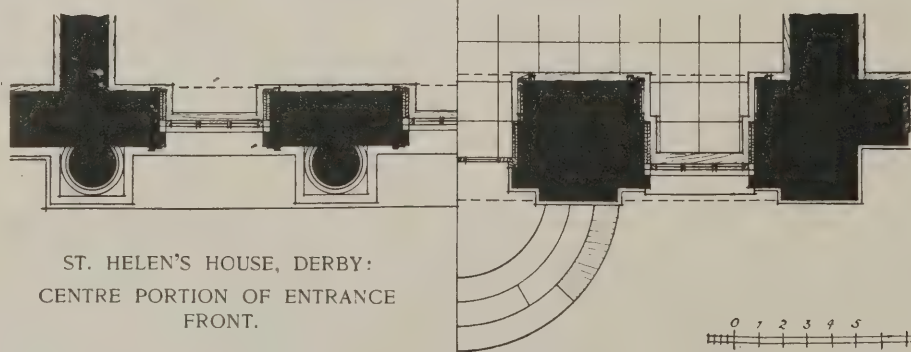
St. Helen's House is now the head master's house of Derby Grammar School. It was erected for John Gisborne, Esq., in the early part of the eighteenth century, but, as with many other buildings of that period, the name of the architect is unknown. The front is all of stone.

* Paper read at the Forty-fifth Annual Convention of the American Institute of Architects.



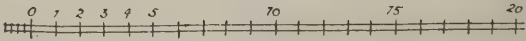
ELEVATION.

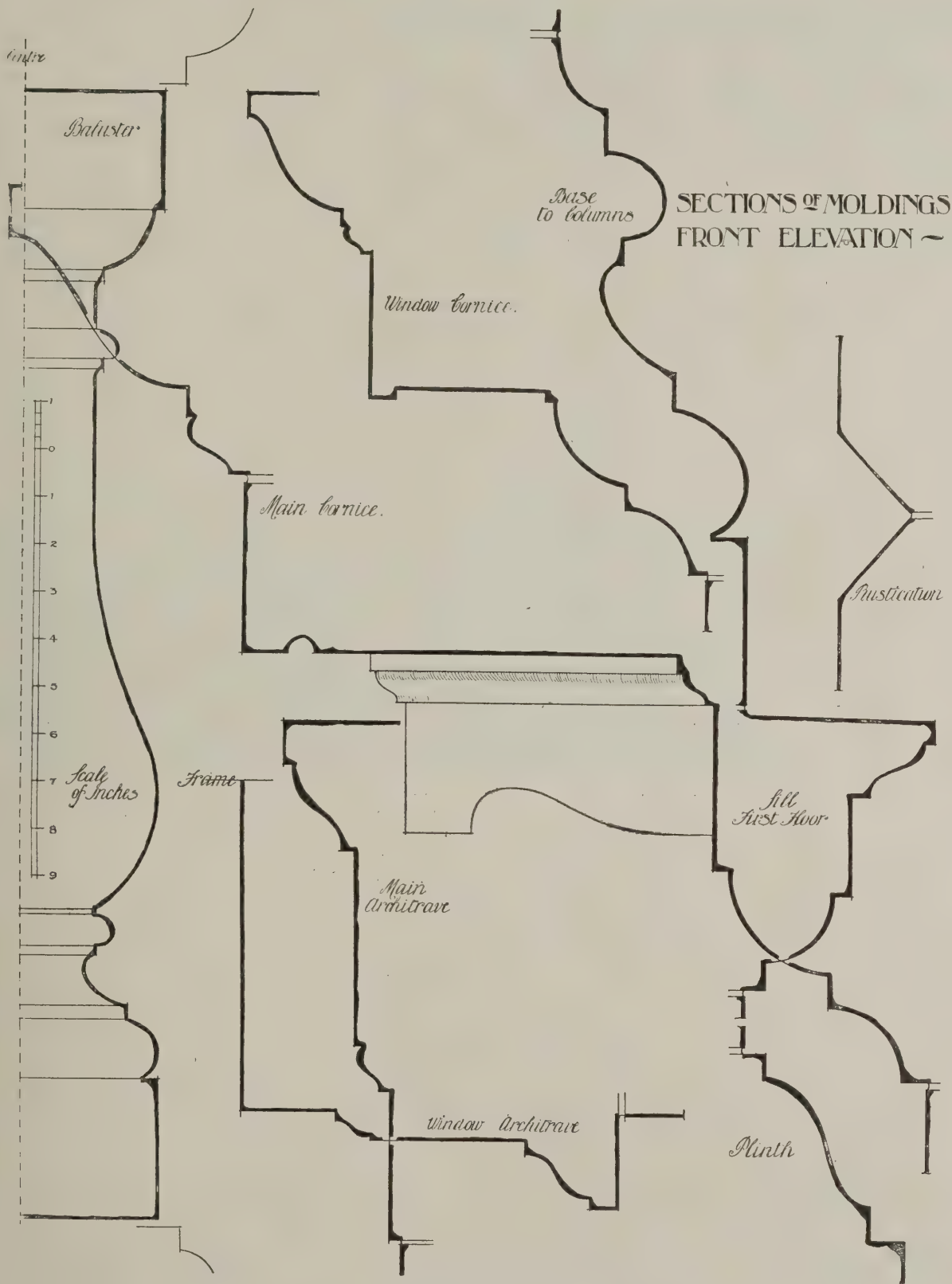
SECTION



ST. HELEN'S HOUSE, DERBY:
CENTRE PORTION OF ENTRANCE
FRONT.

MEASURED AND DRAWN BY CHARLES H. POTTER.





ST. HELEN'S HOUSE, DERBY.

MEASURED AND DRAWN BY CHARLES H. POTTER.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

What a Garden City Is and Is Not.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Under the heading of "A New Garden City," a paragraph has gone the round of the Press stating that a new garden city is being started at Dovercourt, and the details given show that on 14 acres of land ninety houses are to be built.

May I again be allowed to point out what a garden city really is? After thirteen years of propaganda by the Garden Cities and Town Planning Association, it might have been supposed that the term "garden city" was tolerably familiar, and that its real meaning was understood by all thinking people taking any interest in social matters. As the appearance of the above-mentioned paragraph, and scores of similar instances, show that there is still a good deal of misunderstanding, might I be allowed to define the essentials of a garden city as distinct from a garden suburb and from ordinary development? They may be stated as follows:

1. That before a sod is cut, or a brick is laid, the town must in its broad outlines be properly planned with an eye to the convenience of the community as a whole, the preservation of natural beauties, the securing of the utmost degree of healthfulness, and proper regard to communication with the surrounding district.

2. That in the town area the number of houses should be strictly limited, so that every dwelling should have ample light and air, with a suitable garden, and that public recreation ground and open space should be provided generously.

3. That the town area should for ever be surrounded by a belt of agricultural and park land, so that while in the centre the urban problem is being dealt with, the rural portion, which should be the larger part of the estate, may be available for farms and small holdings, in order that the small holder and market gardener may have a new market direct to hand for the sale of produce.

4. That the return on capital should be limited to, say, 5 per cent., any profit above that amount being applied to the estate itself for the benefit of the community.

5. That the town should be not merely residential, but also commercial and industrial; that provision should exist for taking the worker and his work away from the crowded centres into the fresh air of the country district, where not only should the land be cheaply obtainable for the employer, but the worker should have a comfortable cottage at a convenient distance from his labour.

It is therefore essential that the land should be of considerable area, and its development should be in the hands of one controlling body, which, in Mr. Howard's scheme, should have for its ultimate object, not the making of huge profits, but the improvement of the conditions of life for all who live on the area. The estate should be somewhere from six to ten square miles in area, and in order to give effect to the desire for combination of town and country about two-thirds should be reserved for the rural area.

It will, therefore, be seen at once how absurd is the designation "garden city" when applied to 14 acres of land.

A "garden suburb" provides that the

normal growth of existing cities shall be on healthy lines, and when such cities are not already too large, such suburbs are most useful, and even in the case of overgrown London they may be, though on the other hand they tend to drive the country yet further afield, and do not deal with the root evil—rural depopulation.

"Garden villages," such as Bournville and Port Sunlight, are garden cities in miniature, but depend upon some neighbouring city for water, light, and drainage; they have not the valuable provision of a protective belt, and are usually the centre of one great industry only.

The garden city therefore stands as the preventive, not as the palliative.

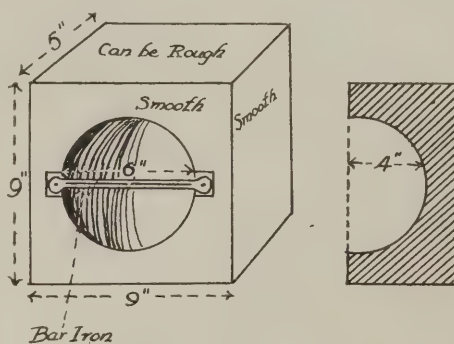
I should be glad to forward further information to any of your readers who may desire it.

EWART G. CULPIN,
Secretary, Garden Cities and Town
Planning Association.
3, Gray's Inn Place, London, W.C.

A New Fire Escape.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The accompanying illustration shows a simple and effective escape which I have devised. It consists of bricks built into the wall in any desired position. The bricks are so constructed as to form steps



or grips by which to leave a burning building from the outside, without risk of injury from falling staircases, etc., and can be relied upon as long as the building itself holds together.

The fixing of the bricks is simplicity itself, and they can be adapted to existing buildings without the least difficulty.

This idea should commend itself to the City authorities and others where large numbers of people are at work in a congested or confined area, and where the means of escape are inadequate.

A further advantage which may be noted is that this means of escape takes up no room whatever and is not in the least unsightly, the bricks being flush with the building itself.

I shall be glad to forward further particulars of this simple device to anyone who is interested.

W. MORGAN.
35, John's Villas, Upper Holloway, N.

SOME FIRE TESTS.

On August 14th the British Fire Prevention Committee undertook some supplementary loading tests with a reinforced concrete floor (submitted by the United States Steel Products Co.) which had been under fire and water test on July 24th, the fire and water test having been a four-hour one, and the standard of "Full Protection" Class B having been obtained. "Triangle mesh" was used as reinforcing material.

The centre bay of the floor, measuring

about 15 ft. by 7 ft. and being 5 in. thick, was to be loaded to 5 cwts. per ft. super., and records were to be taken of the deflection at certain intervals, the object of the test being to show that a floor of this type is still serviceable after a severe fire.

The tests were conducted by a sub-committee under the direction of Mr. Max Clarke, F.R.I.B.A. There was a considerable attendance of members of the Committee and officials from the various Government and municipal departments concerned, who were received by Mr. Edwin O. Sachs, F.R.S.Ed. (chairman of the Executive), Mr. Ellis Marsland (hon. secretary), and other members of the Council.

During the afternoon various other materials which had been under fire test during July were also exhibited.

The Committee announce that a series of fire tests with the flame-proofing of textiles treated by the Snowdon process have resulted in the process being classified as making the materials under review "Non-Flaming," which means that less than 5 per cent. of a square yard of treated material burns in sixty seconds on the application of flame. The materials under review treated by the Snowdon process were scenic canvas (for theatres), curtain net and art muslin (as used in bazaars), and flannelette; wadding and thin paper (as used by drapers for Christmas decorations) treated by the same process likewise obtained this classification in some supplementary tests.

The Committee's official fire tests with "Cellit" (a non-inflammable celluloid) will take place at the end of September, and the tests with asbestos cement roofing materials early in October, when there will also be further fire tests with glazing.

TEMPORARY STORAGE OF CEMENT.

Many users of Portland cement need to store it only for the short interval between the time of hauling it from the dealer and using it in the concrete work. Any building with a good roof, tight side-walls, and a dry floor will do. Make a temporary double floor by means of small beams or logs and loose boards. See that driving rains or damp air cannot reach the cement.

Portland cement weighs nearly 100 lb. per cub. ft.; therefore judgment must be exercised in loading the floor. Likewise, on account of its weight and possible damage from dampness, do not pile the cement against the side-walls of the building unless the house is full-lined or skeleton-lined on the inside. Store the cement so as to leave an open space or an aisle along the side-walls and aisles at places necessary to separate deliveries. Get rid of all possibility of the cement piles toppling over by laying the bags, as a mason would say, "headers and stretchers," that is, alternately lengthwise and crosswise, so as to tie the pile together. Examine the building frequently to see that there are no leaks in the roof or side walls.

Even on the work never pile cement on the ground or on bricks. Throw down a few blocks, lay boards upon them and make a dry floor for the cement. Have just enough cement on the work to keep things going. A good tarpaulin is handy to cover up the cement in case of a sudden shower. Always buy cement from the dealer who has a dry store-house. If the cement in the bag has been wet it is hard as a rock; do not use it under any circumstances. However, do not mistake lumps caused by pressure in the store-house for "set-up" cement. Such lumps crumble easily and the cement is perfectly good.

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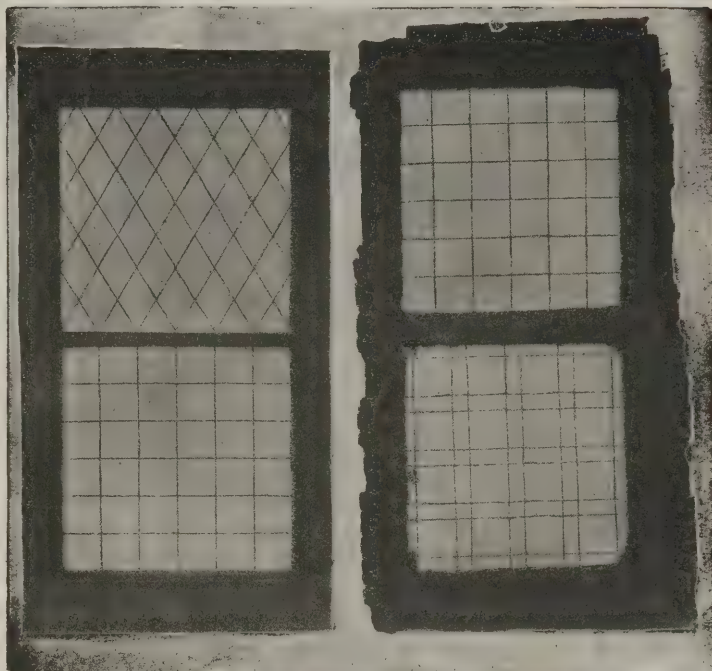
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NEWS ITEMS.

Our Telegraphic Address.

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A New Reinforced Concrete Company.

A new private company, with the title of "The Rigid Reinforcement and Concrete Engineering Company, Ltd.," has been registered. The capital is £500, and the first directors are A. Selby, W. E. Aked, and H. Mann. Registered office, 26, Rosslyn Road, Barking, E.

Royal Technical College, Glasgow.

The Calendar of the 117th session of this college, for 1912-1913, has just been issued. Full instruction is given in architecture and building, Professor Gourlay being the director, with Mr. James S. Boyd as chief assistant, and a large number of qualified lecturers for the several branches of work.

Removal of Offices.

Having, through expansion of business, found it necessary to acquire increased accommodation, Messrs. W. H. Wilcox and Co., Ltd., oil refiners and leather belting manufacturers, have taken No. 38, Southwark Street, London, S.E., adjoining their main warehouses, to which building they have now removed.

A New Hygienic Sash Window.

A new window sash that admits abundance of air while being rain-proof and weather-tight has been devised by a lady correspondent, who desires to sell her rights in the invention. Any communications from firms interested should be addressed to "Nemo," ARCHITECTS' AND BUILDERS' JOURNAL Office, Caxton House, Westminster.

A Trade Outing.

The employees of Messrs. The Coatstone Co. had their annual outing on Saturday, August 17th, when a river trip was made from Richmond to Windsor. Excellent arrangements for the party (which numbered about eighty) were made by Mr. A. W. Neal, the patentee of "Coatstone" and inventor of "Nealstone."

L.C.C. Chief Engineer.

The London County Council are inviting applications for the appointment of chief engineer of the Council and county surveyor for the Administrative County of London. The applicant appointed will be required to commence his duties on January 1st, 1913, and will not be allowed to take any private business or any other paid employment. The salary is £2,000 a year.

Town-Planning "Diseases."

In the course of a lecture on modern town-planning in Germany, delivered at the Summer School of Town Planning, Hampstead Garden Suburb, Herr Langden said that Germany for some time had suffered from various "diseases" in town-planning matters. First there was the "diagonal disease," then the "block" or "rectangular disease," the bacillus of which was found to be that of the straight line; and, subsequently, the "worm disease," as a result of which streets were built in such wavy curves as almost to cause dizziness to the pedestrian. This was followed by the "open space disease." Every one of these diseases had at some time or other been awarded a first prize. They in Germany had, however, overcome these diseases very well,

though they still had relapses at times. They had learned not to sacrifice too much to æstheticism, and that they could not yet afford to disregard the style of common sense.

The Château de Maisons, Paris.

Acquired by the French Government eight years ago at a cost of £8,000, the old Château of Maisons—better known to-day as Maisons-Laffitte—has been rearranged under the direction of M. Georges Malençon, and is henceforth to be a museum of the seventeenth and eighteenth centuries. It was formally opened on Friday last. Francois Mansart was the architect of the building.

Proposed Amalgamation of Building Trade Unions.

Voting on the proposal to amalgamate all the unions in the building trade is now in progress and is to be completed and sent to the Parliamentary Committee by Monday, September 30th. A conference of building trade delegates has been convened to take place in Essex Hall, London, on October 21st. It is proposed to call the new organisation the Amalgamated Building Workers' Union. The object is to unite the building trade unions, to maintain a fighting organisa-

tion, to take action nationally and internationally on the ground that the interests of all wage workers are identical, and to organise by industries as workers, instead of by sections as craftsmen, for trade purposes. There will be a uniform scale of contributions and benefits.

A Day School of Building.

A Senior Day Technical School for students of sixteen years of age and upwards who intend to take up a career in general building, architecture, surveying reinforced concrete, or structural engineering applied to building, is about to be started at the London County Council School of Building in Ferndale Road, Brixton. The school will be open on five days every week, the fees for the complete course being three guineas a term. There will be three terms in the year, the first commencing on Monday, September 23rd.

Costly Site for a Skyscraper.

The biggest deal in landed property in the history of New York has been made by a corporation which has purchased the site, No. 120, Broadway, on which stood the Equitable Life building (burnt down last January). The price of this site was £2,800,000, or £56 8s. a



REGENT STREET POLYTECHNIC, LONDON: MARELE DOORWAY AND PANELLING IN ENTRANCE HALL.

GEORGE A. MITCHELL, A.R.I.B.A., ARCHITECT.

square foot. On it the corporation intends to erect a skyscraper thirty-six storeys high, costing £3,200,000. The building is expected to be completed in May, 1914.

Four New Town-Planning Schemes.

The Local Government Board have given authority for the preparation of four further town-planning schemes under the Housing, Town Planning, etc., Act. The schemes are to be prepared by the Corporations of Bournemouth, Halifax, and Southport. In the case of Bournemouth the scheme is to apply to an area of about 223 acres situate in the Southbourne Ward of the borough; the Southport scheme will extend to an area of about 2,848 acres; while at Halifax two schemes are to be prepared for the Ovenden and Warley districts of the borough, comprising about 880 acres and 756 acres respectively.

Hints on the Use of Varnish.

Under the title of "Some Varnish Vagaries," a booklet which must be indispensable for the practical nature of its contents, has been issued by Messrs. Robt. Ingham Clark and Co., Ltd., of Caxton House, Westminster. The purpose of the booklet is thus summarised in the "Foreword": "In compiling the following notes we have endeavoured to enumerate as concisely as possible the principal defects which manifest themselves in the application of varnish, to explain the causes of these defects, and, where possible, to suggest some means of prevention and remedy." This programme is admirably followed out, and the information is precisely of the kind that is likely to be useful to those who are confronted by a "vagary."

Torquay's New Pavilion.

The new pavilion at Torquay, recently opened, has been erected from designs by Mr. Henry R. Garrett, the borough engineer, on a site at the eastern end of Princess Gardens. As the ground is reclaimed from the sea, and mainly of sand, special provision had to be made for the foundations of the building. After careful consideration a reinforced concrete raft was adopted. Upon this a steel framework was erected, the spaces between the stanchions being filled with brickwork faced with imitation marble. The roof is of steel lattice-work covered with felt and copper, that portion of it which faces Princess Gardens and the harbour being flat, with an external covering of asphalt, so that it may be used as an open-air promenade and tea-garden. The total cost of the building was £17,000, and £3,000 has been spent in furnishing it.

Pershore Abbey Badly in Need of Repair.

An effort is being made to raise £2,000 for urgent repairs to Pershore Abbey. The west wall of the south transept being stripped recently of its covering ivy, ominous fissures in the masonry were revealed. The existing main transept and the tower arches date from the end of the eleventh century. After the great fire of 1287, there was built on the Norman arches the beautiful lantern tower. The weight of the tower was too heavy for the supporting walls. They gave to some extent, and the origin of the cracks lay in this pressure. The erection of the heavy stone roof on the transept about 500 years ago may have increased the size of the cracks. The nave was ruined after the dissolution of monasteries in 1539, and the tower lost the whole support on the western side. The north transept fell in

the seventeenth century. The effect of this loss was to imperil gravely the tower on that side, a danger remedied by the great buttress erected in 1686. It is now urged that the buttressing of the tower on its western side should be carried out with as little delay as possible. A concussion, or even a great storm, might bring the tower down in irreparable ruin.

THE SCULPTURE OF BOURGES CATHEDRAL.

Bourges is pre-eminent in sculpture both of the twelfth and thirteenth centuries. It surpasses Chartres in the earlier sculpture of its side porches and Amiens in its Last Judgment over the great door of the west end. The inner part of the side porches belongs to an earlier church of the twelfth century. The outer is pure Gothic with all the beauties and none of the defects of contemporary Italian work. In them, as nowhere else, one may compare the Romanesque sculpture with the Gothic, and see what a vast difference there is between them. In the first the inspiration comes from the South and from the distant Roman past. In the second it comes from the North and seems to look forward to the art of Rodin as much as the sculpture of Donatello a century later. The magnificent Romanesque figures of the south porch are the final works of an ancient tradition; they are sculpture tamed into perfect congruity with the growing art of architecture and yet full of their own life and character. Like the half-Corinthian capitals of the same age they tell us where the new building had its source and are symbols of the continuity of civilisation. But in the Gothic sculpture, as in all the detail and design of complete Gothic, that continuity seems to be broken. The noble headless figure of a saint in the same porch is a symbol of a new generation that looks forward, not back, and has lost all memories of the old world and its overpowering perfections.

The change is not all for good. The old sculpture is better architectural ornament than the new. The figures look as if they had grown out of the stone. Their draperies, though full of spirit, decorate as well as the conventional ornament on the shafts beside them, and they have an Oriental dignity which seems to come from Byzantium and beside which the eagerness of the later sculpture looks a little restless. The Last Judgment over the great central porch of the west front is more life than decoration. The sculptor's main purpose evidently was to tell his story, and he tells it with great spirit. It is probably the finest Last Judgment of the many that are to be found in the same place in French cathedrals; certainly far finer than the Last Judgment of Amiens, which looks clumsy and provincial compared with it. The scheme of these sculptures is usually much the same. Below there are the dead rising from their tombs. Then comes the Angel judging with the scales, the blessed on his right, the damned on his left, and above all is God with attendant angels. At Bourges the action of the awakening dead is wonderfully spirited and natural. Their bodies are modelled better probably than any nude figures of the time either in France or Italy. The judging Angel is as beautiful as any of Fra Angelico's, and he is removing a little child on his left from the importunities of a grinning devil who seems to claim him, not very seriously. Indeed, all the business to the

left of the Angel is comic rather than dreadful, and that not because the artist is incompetent, but because he evidently enjoyed carving it. Whether he believed in it all or not, it must have amused him to think of the people he disliked getting their deserts. In his treatment of them he displays all the French energy and ferocity of caricature without the utter ugliness and grotesqueness of German art. There is a refinement in the execution, if not in the idea—that refinement which one finds in some of the most brutal art of modern France. Indeed, this sculpture bears much the same relation to the earlier Romanesque sculpture as the modern naturalistic French art bears to classical French art. There are always two great conflicting tendencies in the French mind, the tendency of tradition, symmetry, and order, and the tendency of fierce self-expression. Now one predominates, now the other. In the thirteenth century both co-operate in masterpieces like Bourges Cathedral, the one in the whole design, the other in detail and ornament. They have never been so harmonised since, and these are the greatest works which the genius of France has ever produced.—Extract from an article in "The Times."

THE TREATY HOUSE PANELLING.

Unless some arrangement is made, the oak panelling in the Treaty House at Uxbridge, where the Commissioners appointed by Charles I. and Parliament met to patch up their quarrel, will be removed next month. It was sold about a year ago by the brewers who own the house, the purchaser being Mr. H. Burgess, of Hounslow. It is understood that an attempt will be made to induce the town of Uxbridge to take steps to preserve the room. To this end the National Trust for Places of Historic Interest and the Society for the Protection of Ancient Buildings have already been approached, but it will remain for Uxbridge to give some practical proof of its desire to preserve the scene of the attempt to conclude the Civil War.

Built in 1576, the Treaty House was the most famous inn between London and Oxford in the coaching days. The Commissioners of Charles I. and Cromwell met at the house in January 1645.

The front of the house, with its stone-mullioned bay windows, is interesting enough, but the building is far more picturesque at the side and rear, where the brickwork, the gables, and fine chimney stacks suggest greater antiquity. It is the opinion of Mr. Allen S. Walker, hon. secretary of the London and Middlesex Archaeological Society, that the present arrangement of the panelled rooms on the first floor is certainly not the original one. At present the famous panelling is found in the rooms at each end, but it is quite clear that the staircase and lobby which separate these rooms are a much later arrangement. The finest panelling is in the "Treaty Room," but it has been so much cut about that the question has been raised whether it was originally made for the house. Mr. Walker is inclined to believe that when the central staircase was made the arrangement of the panelling was entirely altered, and that the "Treaty Room" now represents only a patchwork edition of its original appearance. The panelling is of finely-grained oak, and of the Early Renaissance type, and of this style the panelling is considered to be a very fine specimen. It is somewhat mutilated, but the oak is in good condition.

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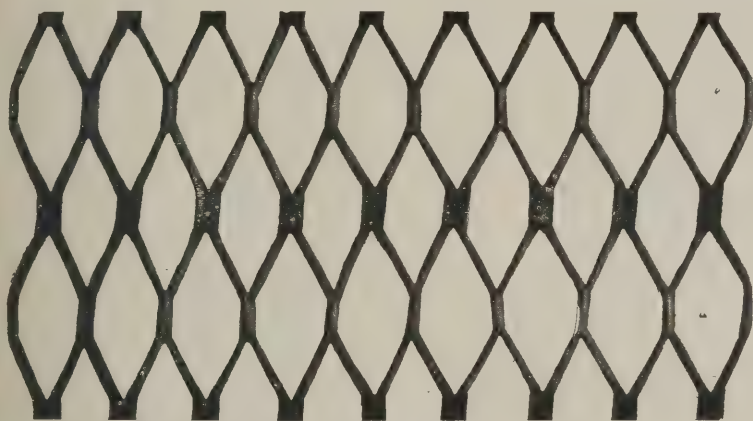
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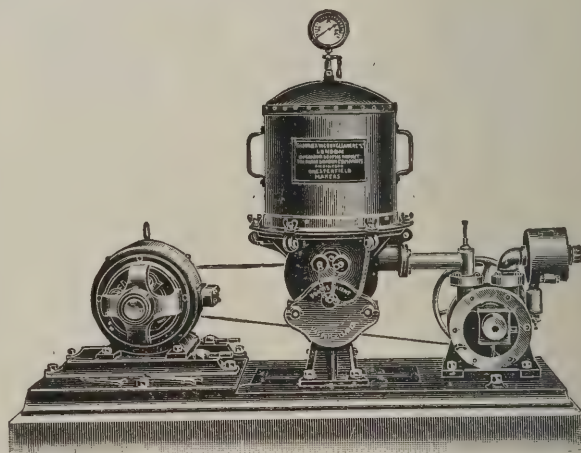
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sealed receptacle without
allowing any to escape into
the atmosphere. It is there-
fore the cleanest cleaning
method existent.



Type C Stationary Cleaner.

GRAND PRIX, TURIN, 1911.

BY APPOINTMENT TO H.M. KING EDWARD VII.

The British Vacuum Cleaner Co., Ltd.,



30, Parson's Green Lane,
S.W.

Telephone: Kensington 3470.

Telegrams: "Vacuumiser, London."

THE INSURANCE ACT.

London Builder Summoned.

At the North London Police Court on Thursday last, before Mr. Hedderwick, Mr. William Slate, builder, of Brecknock Road, Islington, was summoned for not having paid the contribution as required by the Insurance Act in respect of several workmen in his employment.

Mr. Travers Humphreys appeared for the Insurance Commissioners; Mr. E. G. Jellicoe was for the defence.

There were in all eight summonses, three relating to Frederick Fletcher, three relating to Harry Waters Girling, and two relating to Arthur Leonard Upchurch.

In the result Slate was ordered to pay a fine of £10 and £5 5s. costs in respect of one summons referring to Fletcher, with the alternative of undergoing twenty-one days' imprisonment. On the other seven summonses he was fined 1s. and 2s. costs. He was also ordered to pay the arrears.

Mr. Humphreys opened the case, stating that it was one of wilful disobedience, as the defendant had expressed his determination not to have anything to do with the Act.

Walter Charles Ivimey, an inspector appointed by the National Insurance Health Commissioners, said that he called at the defendant's premises and asked the defendant if he intended to comply with the Act, and he said "No." The defendant said that a few days before July 15 he caused a letter to be written to each of his employes intimating his intentions under the Act. In consequence of that letter some of his men left his employment.

Frederick Fletcher, sixteen, of Richmond Road, Barnsbury, said that he was in the employment of the defendant as a handy boy. He got his insurance card about a week after the Act came into force. At the request of the inspector he asked the defendant to stamp his card. At that time he had not the card in his possession.

Mr. Humphreys said that was immaterial. If the employe had no card it was the duty of the employer to obtain an emergency card from the post office.

In an argument between Mr. Hedderwick and Mr. Humphreys, it transpired that there is no mention of emergency cards in the Act, but only a provisional regulation.

Mr. Jellicoe said the Act provided a contract of insurance between the State and employed persons. Unless the State fully carried out the promises of the Act the contributions could not be recovered and no penalties were incurred.

Mr. Hedderwick: I have never heard of it being held that an Act of Parliament was a contract.

Mr. Jellicoe said the contention of the Commissioners was that the regulations—not the Act—had not been complied with. He submitted that the regulations were void. Mr. Humphreys had produced provisional regulations, but there was no provision in the Act for the making of provisional regulations.

In giving his decision Mr. Hedderwick said it was quite clear that the defendant had not complied with the Act and had no intention of doing so when the time came for him to stamp the cards—in other words, he intended to defy the law. Although there were technically eight cases against the defendant, he would impose the full penalty on one summons only,

with reference to Fletcher—viz., £10, with £5 5s. costs; alternatively the defendant must undergo twenty-one days' imprisonment. Upon all the other seven summonses there would be a fine of 1s., with 2s. costs. He would also order the defendant to pay the arrears—viz., 7d. per week with regard to each employe.

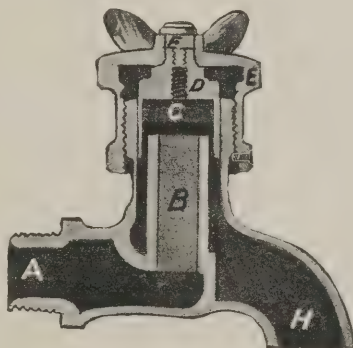
Mr. Jellicoe asked the magistrate to state a case for the opinion of the Superior Court.

Mr. Hedderwick said he was not opposed to doing so, but he must have the formal application in writing before he decided what to do.

TRADE AND CRAFT.

A Patent Screw-Down Tap.

Liability to leakage, not only through the use of perishable washers, but by the percolation of water through the stuffing-box, is the chief defect of the ordinary kind of tap; but with the introduction of the screw-down tap this disadvantage has been eliminated. The patent brass syphon tap introduced by Mr. Francis E. Owen, of 16, King's Road, Romford, Essex, while preserving the main features of the screw-down, is fitted with certain additional improvements which make it highly efficient. The construction is plainly shown in the accompanying section. The action of the tap is as follows: The water enters at A and passes up tube B. The unscrewing of cap E raises cup D containing washer C, thus allowing the water to flow over the tube and out through the nose H. Cup D is secured



loosely to cap E by a set screw F, and it rises and falls without turning with the cap, all friction being avoided. Points of interest about this tap are that it has no stuffing-box and that it opens and closes by one turn. The tap is fitted with a special type of washer, which cannot spread, being enclosed in a cap; and consequently it may be used for hot or cold water with equal advantage. These taps have been fixed in St. James's Palace, most of His Majesty's Prisons, the corporation yards of Croydon, Southend-on-Sea, Great Yarmouth, etc., Dr. Barnardo's Homes, the Constitutional Club, the Royal Merchant Seamen's Orphanage, and in many other important institutions. Over 5,000 of these taps have been bought by one water company alone. An illustrated booklet giving full details of the tap, together with prices, has been issued by Mr. Owen, to whom application for copies should be made. In it are contained illustrations and particulars of other specialties patented by Mr. Owen—such as bath cocks, lavatory valves, stop-bosses, and useful locking rods for cleaning drains.

THE NEW SCHOLARSHIP AT
ROME.

The following are the full particulars of the scheme of competitions for the scholarship in architecture at the British School at Rome (offered by the Commissioners for the Exhibition of 1851), of which a brief notice was given in our issue for last week:

The scholarship will be of the value of £200 per annum, and will be ordinarily tenable for three years. The competitions will be conducted by the Faculty of Architecture of the British School at Rome.

The examinations will be graduated and in three stages:

A. An open qualifying examination.

B. A first competition, open to candidates selected in the open qualifying examination, to the winners of certain scholarships, and to candidates nominated by certain bodies.

C. A final competition, open to not more than ten candidates selected from the candidates in the first competition.

Candidates must be British subjects, and less than thirty years of age at the date of entry for the final competition, which will be held in September, 1913.

Candidates who have gained a place in the list of eligible candidates for the first competition, either as the result of the open qualifying examination or in virtue of their having obtained certain scholarships or of their having been nominated by certain bodies, or who have failed in the final competition, will be entitled to compete again in the first competition, until the age limit defined above has been reached.

The Open Qualifying Examination.

For this examination all British subjects under thirty will be entitled to enter. The subject will be set by the Faculty of Architecture, and the design is to be sent in on a double-elephant sheet. From candidates entering for this examination the Faculty will select those eligible to compete in the first competition.

The First Competition.

For the first competition the following candidates will be entitled to enter:

1. The candidates selected in the open qualifying examination.

2. Winners of the R.A. Travelling Studentships and of the following R.I.B.A. Studentships: Soane Medallion, Tite Prize, Owen Jones Studentship, Ashpitel Prize, Grissell Medal.

3. Candidates nominated by the following bodies, with a maximum of four from any given institution:

a. The Royal Academy.

b. The Royal College of Art.

And the following institutions "recognized" by the Royal Institute of British Architects:

c. Edinburgh—The Edinburgh College of Art.

d. Glasgow—The Glasgow School of Architecture.

e. Liverpool—The Liverpool University School of Architecture.

f. London—The Architectural Association of London.

g. London—The London University School of Architecture.

h. Manchester—The Manchester School of Architecture.

i. Sheffield—The Sheffield University Department of Architecture.

4. Candidates nominated by the Allied Societies of the Royal Institute of British Architects in the Colonies.

The subject will be set by the Faculty,

who will also determine the number and character of drawings required.

Candidates will be allowed two months for the preparation of their designs, reckoned from the date of the issue of the subject with its conditions.

From the candidates who have competed in the first competition the Faculty will select not more than ten candidates for the final competition.

The Final Competition.

The subject for this competition will be set by the Faculty, and will be announced in the room on the opening of the first sitting of the competitors. The competition will be held "en loge" in London. It will begin at 10 a.m. on a Monday morning and continue till 1 p.m. on the Saturday of the second week following.

Competitors will be required on the first day to make a sketch design which shall be covered with a sheet of tracing paper sealed down in the compartment by the Moderator at the end of the first day.

In their finished designs the competitors must adhere generally to the idea of the sketch design.

The Faculty will select the successful candidate for the Commissioners' election.

Further Particulars.

The subject for the open qualifying examination will be announced this autumn. The last date on which designs for this examination can be received will be January 20th, 1913. The date of the first competition will be March 15th to May 15th, 1913. The date of the final competition will be September 15th to October 4th, 1913. It is the intention of the Faculty of Architecture to arrange the announcement of subjects for the open qualifying examination and for the first competition so as to enable students in the Dominions to have the same time for the preparation of their designs as the students at home.

The hon. general secretary of the scheme is Mr. Evelyn Shaw, at the office of the British School at Rome, 54, Victoria Street, London, S.W.

OBITUARY.

Mr. George Maides.

We regret to announce the decease, on Friday afternoon last, August 23rd, of Mr. George Maides, of the firm of Maides and Harper, builders and decorators, of Croydon. Mr. Maides, who carried out a considerable amount of work for a number of the best known architects of the day, was sixty-seven years of age. We hope to publish some fuller particulars in our next issue.

Mr. C. E. Dawson.

The death is announced of Mr. Charles Edward Dawson, a well-known Derbyshire architect and landscape gardener. Mr. Dawson, who was fifty years of age, was a son of Mr. Joseph Dawson, who, with Sir Joseph Paxton, laid out the grounds of the Crystal Palace and Chatsworth House.

Mr. R. W. Heneker.

The death has taken place at Bourne-mouth of Mr. Richard William Heneker, at the age of eighty-nine. Mr. Heneker, the "Morning Post" says, "studied architecture and surveying under the late Sir Charles Barry, under whom he assisted in designing the present Houses of Parliament and Westminster Bridge."

Mr. G. T. Redmayne.

The death took place on August 21st at his residence, Great Stotley, Hazelmere, of Mr. George Tunstal Redmayne. The

deceased gentleman, who was about seventy-three years of age, served his articles as an architect with Mr. Alfred Waterhouse, and he designed several buildings in the Newcastle district. Mr. Redmayne married a sister of Mr. Alfred Waterhouse. She died some years ago. The deceased leaves two sons.

COMPETITIONS.

Huddersfield Town Planning Competition.

We are notified that, while the Competitions Committee of the R.I.B.A. cannot advise the council to bar the above competition, they consider the conditions in many respects unsatisfactory. The promoters of the competition are being approached with a view to the amendment of the conditions.

Constables' Houses, Ayr.

The conditions of the above competition having been found unsatisfactory, the Glasgow Institute of Architects advise Members and Licentiates of the R.I.B.A. not to compete.

Statue to Lord Selkirk, Montreal.

It is proposed to erect at Montreal, Canada, a statue to Lord Selkirk at a cost of £6,000. The successful competitor will receive the commission and premiums of £100 and £60 will also be awarded. Communications should be addressed to Mr. H. G. Gunn, hon. secretary, Lord Selkirk Association of Rupert's Land, Montreal, Canada.

King Edward Memorial, Montreal.

The design of Mr. Phillipe Hebert, C.M.G., of Montreal, has been accepted for the public memorial to be erected in Phillips Square in memory of King Edward VII. The design comprises a granite pedestal and a bronze statue, the former being 30 ft. and the latter 10 ft. in height. Mr. Todd, the landscape architect, is preparing a scheme for the embellishment of the square.

New Municipal Buildings, Burma.

Messrs. Ogilvy Gillanders and Co., agents for the Rangoon Municipality, of 67, Cornhill, E.C., write for the information of intending competitors that the date in the conditions of Clause 28 has been altered from August 31st to September 28th, and in Clause 14 from January 1st to February 1st, 1913. The latest date for posting letters to reach Rangoon by the latter date will be the Indian mail of January 10th, 1913. The assessor appointed by the committee is a Fellow of the Royal Institute of British Architects.

LIST OF COMPETITIONS OPEN.

SEPTEMBER 1. MUNICIPAL OFFICES, GOOLE.—Premiums, £30 and £15. Particulars, Mr. R. Tyson, Council Offices.

SEPTEMBER 9. COUNCIL SCHOOL, CHORLEY.—The Education Committee of the Borough of Chorley invite designs for a Council school for about 500 children. Conditions (£2 2s. returnable) from John Mills, Town Clerk.

SEPTEMBER 30. SCHOOL, LLANELLY.—The Llanelly Education Committee invite designs for school buildings and domestic subjects centre at Stebonheath Terrace. Mr. G. E. Halliday, F.R.I.B.A., has been appointed assessor. Particulars from Mr. I. W. Watkins, clerk, Education Offices, Coleshill Terrace, Llanelly.

SEPTEMBER 30. NEW BUILDINGS, UNIVERSITY COLLEGE, DUBLIN.—The Governing Body of the University College, Dublin, invite architects to submit designs for new college buildings. Competition is limited to architects living and practising in Ireland. Mr. H. T. Hare, F.R.I.B.A., has been appointed the assessor. Applications, accompanied by a cheque for two guineas (returnable), to J. W. Bacon, M.A., Secretary and Bursar, 86, St. Stephen's Green, Dublin.

OCTOBER 14. PUBLIC SWIMMING BATH, BALHAM, S.W.—Wandsworth Borough Council invites designs for a swimming bath to be erected at Balham. Conditions schedule of accommodation, and plan of site may be obtained from Mr. P. Dodd, M.Inst.C.E., 215, Balham High Road, S.W., on deposit of £1 1s. Designs to be sent to Mr. D. A. Nicholl, Town Clerk, Council House, Wandsworth, S.W.

OCTOBER 29. EXTENSION OF MUNICIPAL BUILDINGS, GLASGOW.—The corporation invite preliminary sketch designs for an extension of their municipal buildings. From the sketches submitted, the author of not more than five designs will be selected for a final competition, at an honorarium of one hundred guineas each. Mr. John J. Burnet, LL.D., A.R.S.A., assessor. Conditions (one guinea, returnable) from J. Lindsay, Town Clerk, City Chambers, Glasgow.

OCTOBER 31. TOWN PLANNING, HUDDERSFIELD.—The Housing and Town Planning Committee of Huddersfield Corporation offer premiums of 100, 50, and 20 guineas for laying out certain areas. Conditions (two guineas, returnable) from K. F. Campbell, M.Inst.C.E., Borough Engineer, 1, Peel Street, Huddersfield.

NOVEMBER 1. KING EDWARD MONUMENT, OTTAWA.—Sketch models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

DECEMBER 1. ROYAL PALACE AND LAW COURTS, BULGARIA.—Architects desiring to take part in this competition should communicate with the Commercial Intelligence Branch of the Board of Trade, Basinghall Street, E.C.

DECEMBER 2. SCHOOL BUILDINGS, CARLISLE.—Particulars, City Surveyor, Carlisle.

OUR PLATE.

Detail of a Paris Apartment House.

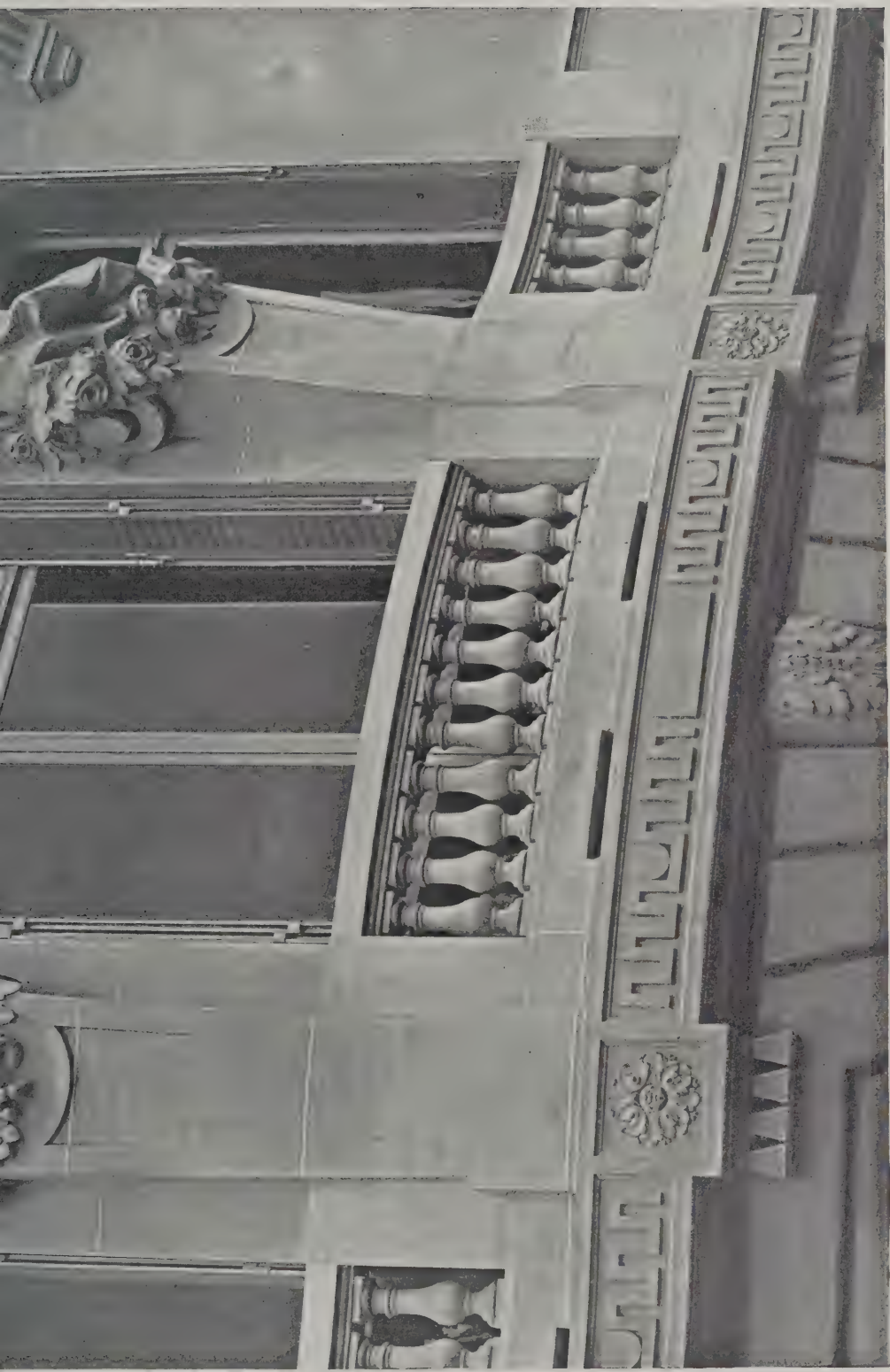
We illustrate as the Centre Plate in this issue a detail of the façade of a new apartment house at Neuilly, a popular suburb of Paris. This example is quite typical of modern French work. The caryatid figures, by M. Henri Navarre, a son of one of the architects, are well modelled, and the semblance of growth from the face of the building is very satisfactory; while the tendency of the superposed mass to crush the figures has been skilfully avoided. The decorative sculpture, by M. Jegoudez, is perhaps somewhat too realistic, particularly the treatment of the swags of flowers. But, apart from these slight criticisms, the work calls forth our warmest admiration.

A Correction.

We regret that in the footnote to our review of Mr. Cyril E. Power's excellent little volumes on "English Mediæval Architecture," published on page 208 of our last issue, we inadvertently gave the title as "London Mediæval Architecture."

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, August 28th, 1912





APARTMENT HOUSE, BOULEVARD MAILLOT, NEUILLY, PARIS: DETAIL OF FACADE.
E. NAVARRE AND R. ROUSSELOT, ARCHITECTS.

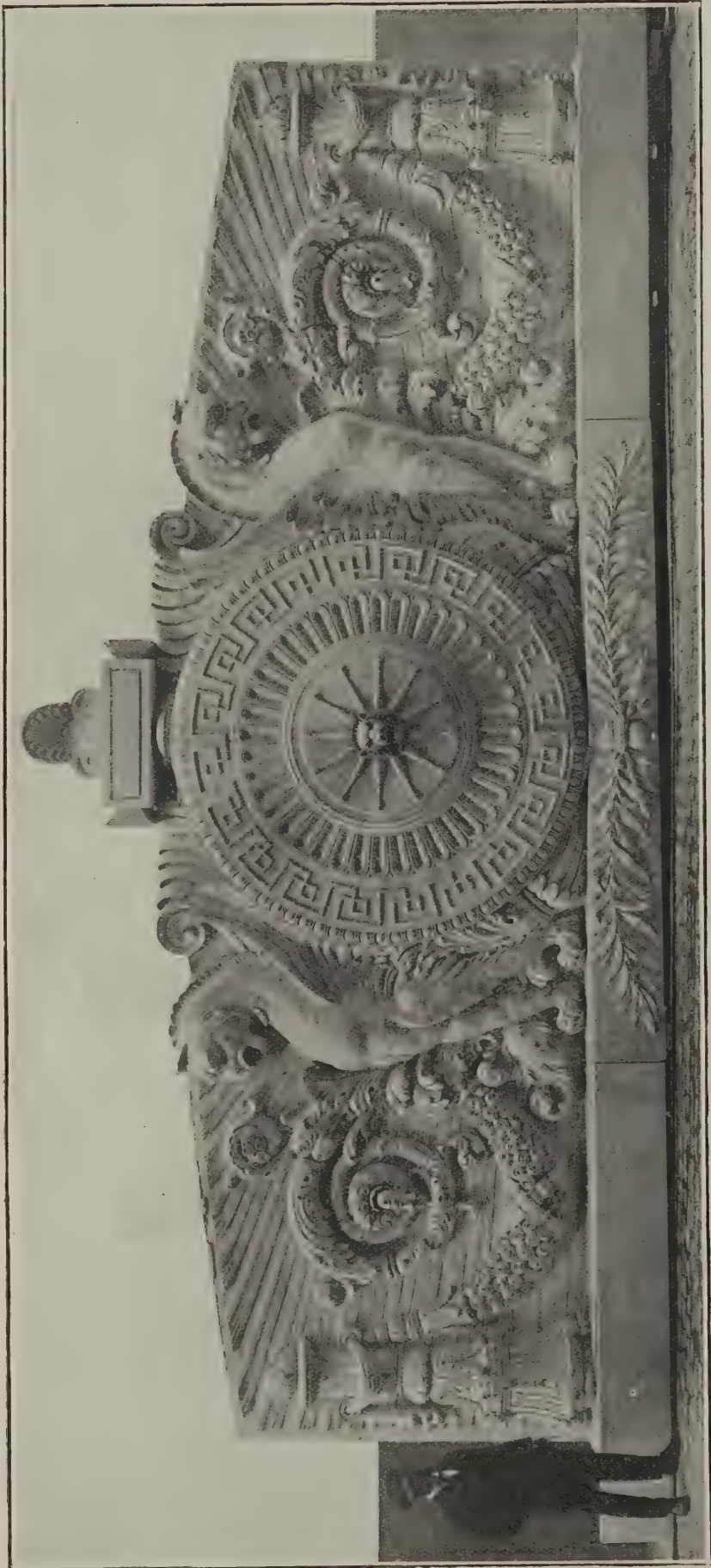
THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
SEPTEMBER 4th, 1912.

Volume XXXVI.

No. 920.





DETAIL OF PLASTER ORNAMENT IN TYMPANUM OVER PROSCENIUM OPENING, HIS MAJESTY'S THEATRE, MANCHESTER.
HORACE FARQUHARSON AND RICHARDSON AND GILL, ASSOCIATED ARCHITECTS.

This piece of plasterwork measures 28 ft. by 10 ft. Some particulars of the theatre are given on page 256.

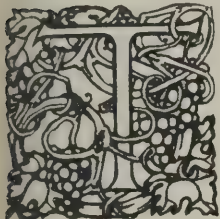
THE ARCHITECTS' & BUILDERS' JOURNAL.

SEPTEMBER 4th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 920.

An English "Prix de Rome."



THE foundation of the Scholarship in Architecture to be given by the British School at Rome, the general conditions of which were published in our last issue, undoubtedly amounts to something like a parallel institution to the Prix de Rome of the French Ecole des Beaux-Arts.

To obtain this latter is one of the greatest ambitions of a young French architect; the holder of it becomes a man of mark in the profession, if his subsequent studies at Rome—his "envois," as they are called—bear out the promise of the preliminary work which gained him the "Prix"; and we do not believe there is any instance in which they have not done so. The obtaining of the prize in the first instance presupposes so much ability, hard work, and ambition that it is not likely to be obtained by anyone who would be inclined to let things slide afterwards. With the French it is the first step to the pedestal of fame and future prosperity.

There seems to be the intention to render the English Prix de Rome equally a test of distinction, which it will be no easy task to win. The permission to compete at all must, in the first instance, be a subject of competition. Candidates are required to submit first, on one double elephant sheet of paper, their reading of an architectural problem set by the examiners, who are termed "The Faculty of Architecture." On the results of these preliminary drawings it will be decided who shall be allowed to compete for the Scholarship. This, on the whole, is a wise provision; it will ensure that those who do actually compete will be students of some ideas and ability, and it will prevent the examiners being troubled with the consideration of worthless attempts. But there are still two further stages, the first competition and the second. For the first there will be those who have passed the preliminary competition, and those who may be recommended by certain bodies or institutions—the Royal Academy, the Royal College of Art, the Royal Institute of British Architects, and some institutions recognised by the last-named body as competent to recommend architectural students. Two months will be allowed for the preparation of designs for the first competition; and from among these competitors the ten best will be selected to enter the final competition. A competitor who passes these three stages of examination and comes out first in the final one will certainly be an architectural student of rather exceptional ability.

Not a hint has been given yet as to the nature of the subjects which will be set for competition; but it has been decided apparently that for the final competition the French "en loge" system shall be adopted, which means, we presume, that each candidate is to be secluded in a separate room and to have no communication with the others, by way of assurance that all is genuine personal work and that there is no copying. The "en loge" system is perhaps the only way of absolutely ensuring

this, though it is a method rather foreign to our English habits. But there is another stipulation in regard to the final competition which seems very much open to question. The competitors will be required, on the first day, to make a sketch design, which will, at the end of the day, be covered with a sheet of tracing paper, sealed down by the Moderator, so that the competitor cannot further retouch it, and the competitors during the succeeding fortnight in which they will be working out their design "must adhere generally to the idea of the sketch design."

Now what is the sense or utility of this condition? The same sort of thing has already been strongly criticised at a discussion at the American Institute of Architects. The Americans, as is well known, have adopted, almost blindly, every feature of the Ecole des Beaux-Arts system; even sometimes to the extent of putting French lettering on their drawings; but at the Annual Convention of the American Institute the "en loge" system was strongly opposed by one member, Mr. Marshall, who said that no great work of art was ever produced as the result of making a snap decision and then taking a long time in working it up; that the only great art work we should ever have would come as the result of long thought with very rapid work at the end. "I know of no great art work which has resulted from deciding in a day or two what you are going to do and then spending three months doing it." There are, as a matter of fact, recorded cases when a great work of art has been produced in this way; where an architect or a sculptor has sketched out his idea in a moment of inspiration and never departed from it. But we doubt if such cases are common, especially in regard to architecture. An architectural design is much more usually a thing which develops as you work at it. And at all events it is foolish to compel a man to adopt the system of rapidly sketching out a design, against time, if his particular talent does not lie in that direction, and there is every reason to look doubtfully on a system which encourages designing in a hurry. A competitor may have an afterthought a day or two later, which he may see at once is far superior to his original idea; but under this system he cannot make use of it; he is bound by his first hurried sketch, "sealed" by the Moderator. This is a mistaken system, and it may have the worst possible results on a man's work. What the examiners ought to concern themselves with is not what a competitor does on the first day, but what he does on the last day; in short, the final result of his design. Each man may have his own way of getting at this result; each has his own way of working; the thing for the examiners to consider is his design. We can see no possible advantage to architecture or to architectural students in compelling them to stick to the character of a hasty sketch design made on the first day; it is much more likely to induce a bad habit of designing in a hurry, which is one of the worst things for architecture. We hope this point will be reconsidered before the subjects for the final examination are formulated.

Supposing the winner selected and the Scholarship awarded, what are to be the conditions under which it is to be held? Is it to be, like the French Prix de

Rome, a scholarship involving residence and study in Rome during the three years for which it is tenable? The question has already been put by some critics of the scheme, whether that is really the best condition of study for an English architect. There is a certain division on the subject even in France. What the French *Prix de Rome* man is expected to do is to study the remains of ancient buildings in or near Rome, or remains of Roman or Greek buildings elsewhere, and to produce restorations of them in which the student can embody the results of his learning and observation. This has led to the production of a number of magnificent sets of drawings, beyond anything of the kind that has ever been produced in England; but there are those, in France, who doubt whether this is really the best training for a modern architect. It is argued that it tends to make French architecture too academical, too little in touch with the requirements of modern life. There is some truth in this; French architecture does tend to be academic; there is a certain monotony of style about it. But on the other hand there is this to be said, that it is kept to a high level of style; that it is not at the mercy of individual caprice. Studying and producing restorations of ancient buildings may not seem to be the most practical preparation for the treatment of modern buildings; but it does cultivate a sense of style and of dignity in architecture, and it does also ensure that the young architect has studied the ancient buildings so thoroughly as to have got at their secret, to understand how they are put together, and what is the meaning of their details. The result is an education of the intellect which may enable him, without imitating ancient architecture, to transfuse some of its spirit into his modern buildings. Such an education tends to raise the standard of architectural taste, and to strengthen the idea of there being a great tradition in architecture. And therefore, taking things all round, we may conclude that in the main the Villa Medici, as the nursery of the most talented French architects, has exercised a beneficial effect on modern French architecture, and that it is partly to its influence that we may ascribe the generally high standard of modern architecture in France. What it may want in variety is atoned for by its dignity and the evidence of culture displayed in it.

An influence of the same kind is certainly needed in English architecture, in which at present there is little idea of tradition or of a standard of design. If the new British School at Rome can take the same place in regard to English architectural education that the Villa Medici takes in regard to French education, it may in the long run have an equally beneficial effect. We do not say that the studies demanded, as the condition of holding the Scholarship, should necessarily be of the same kind as those which find favour with the *Ecole des Beaux-Arts*. Some special programme of study for those who win the scholarships will, of course, have to be formulated; the student will be required to produce proofs that he is making good use of his opportunities; and this is a point which will need to be very carefully considered. Perhaps one study for the restoration of an ancient temple or other building, on the French model, might be demanded from each holder of a scholarship; there is a considerable educational value in such work; but it should not of course be confined to that. Perhaps a design for a modern building founded on suggestions from an ancient example might be an advantageous use of the student's time. And it would probably be desirable to regard Rome not as a continuous place of residence, but as a centre from which excursions can be made for the study of other architectural remains. We should not, however, regard residence in Rome as wasted, as some critics of the scheme appear to think. The advantage of living, more or less, for three years in a city full of great architectural monuments and memories is, that it stimulates the imagination and tends to raise one's ideals of architecture; and such an influence must tend to raise the standard of architectural design.

For the English analogue of the Villa Medici to have its best results, two further conditions are necessary, to one of which we refer with reluctance; but it must be referred to. If the British School at Rome is now to be developed into a great centre of art-teaching, it is essential that its director should be either an artist or a person specially acquainted with art. In its original form the British School at Rome was, like the British School at Athens, essentially an institution for the study of Roman archaeology, and an archaeologist of exceptional knowledge and ability was appropriately placed in charge of it. But archaeology is not art; and now that the School is to be a great art-teaching centre, not only for architecture, but for painting and sculpture, an artist should be placed at the head of it. At the Villa Medici the Director is always an artist of some distinction; generally speaking an artist who has done a considerable amount of good work, and who is appointed Director of the Villa as a kind of honourable and useful retirement. There might very well be an archaeological department in the new School, the direction of which would naturally be assigned to the able archaeologist who has been at the head of the old British School. But the Director of the establishment which is now to be an Art-School ought to be an artist.

The other condition requisite is that those who go through an arduous course of study to gain the Scholarships should be able to feel some confidence that their labours will lead to something more than mere honours; that the Government of their own country will regard them as persons who have distinguished themselves in architecture and who have a claim to be considered when public works of architecture are to be carried out. In France this is always the case; a *Prix de Rome* man is never forgotten by his Government; he is certain of a good commission from it as soon as an opportunity occurs. It ought to be the same in England; and unless it is to be so, we doubt if the scheme of the Roman art-school will succeed. Men will not go through all that programme of work merely for barren honours.

Buckingham Palace.

IT appears that operations are being taken in hand at Buckingham Palace which seem to point to an intention of refacing the façade, but to what extent and in what manner has not been revealed. One daily paper, which has apparently attempted to get at the facts, states that "the greatest reticence is displayed by the authorities as to the purpose for which measurements of the façade are being taken, and all official information on the subject is rigidly withheld." We cannot see any reason, however, for this reticence. Operations of this kind are matters of considerable public interest, and the nation has a claim to know what is in hand. If there is any intention to build a new façade to Buckingham Palace we should be glad to hear it. Ever since the competition for the Queen Victoria Memorial was settled we have maintained that the scheme for that memorial ought to have included a new façade to the palace, the present commonplace façade being totally unworthy of its position at the end of the memorial road. But if anything of the kind is to be done, it ought to be done as well as possible. Such a façade ought to be made the subject of a public architectural competition; or at the least the intended design should be made public. If however, it is merely intended to reface the present design with stone, our conclusion may be very briefly expressed—it is not worth doing. The only thing worth doing is to make a new and better design of the façade.

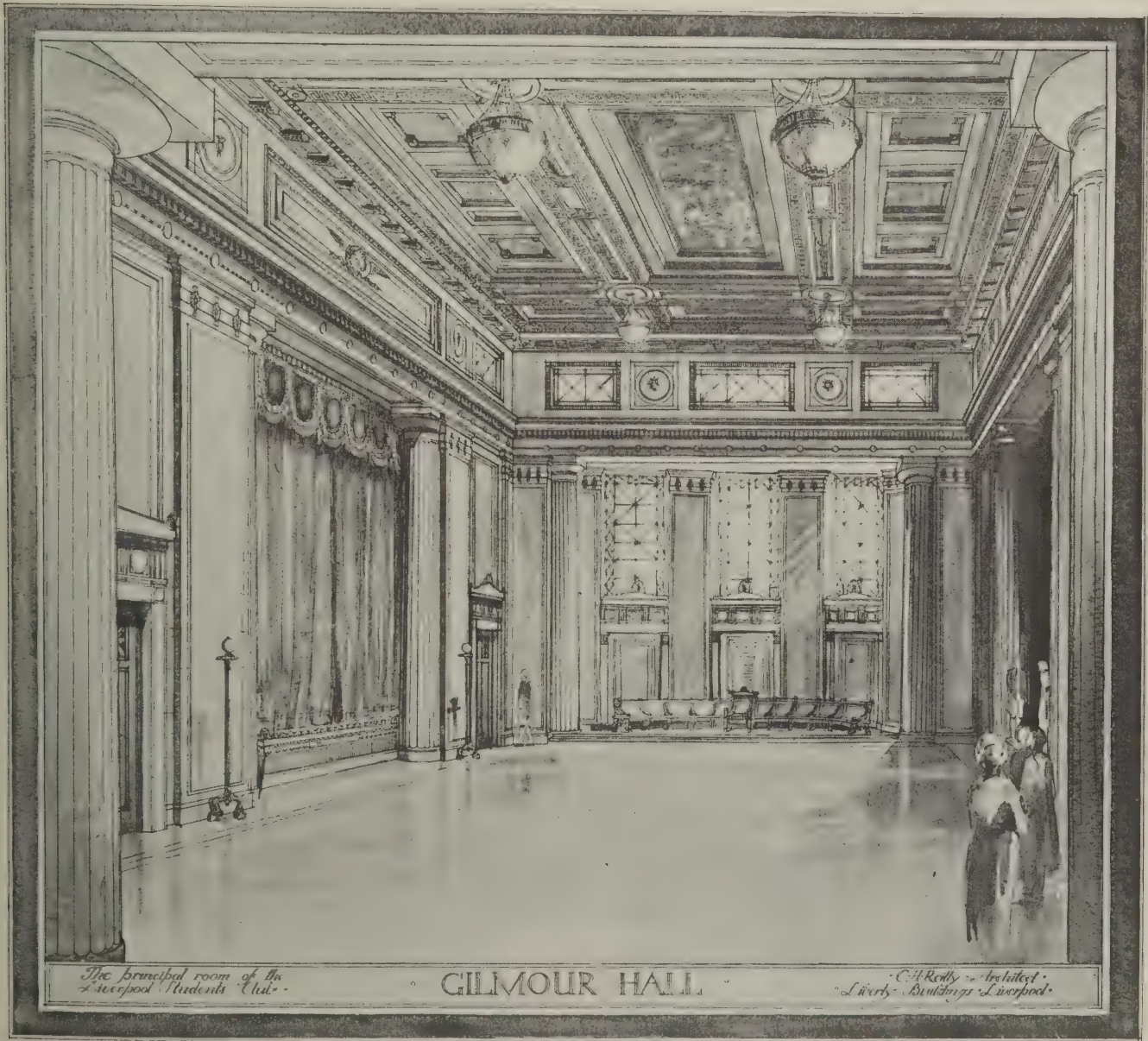
The Architecture of Kingsway.

IT is rather amusing at this time of day, to find a correspondent in the "Observer" claiming that the London County Council ought to have restricted the designs in Kingsway to one style, and insisted on the preservation of the same level for the horizontal features. It seems to be already entirely forgotten that when the

lines of Kingsway and Aldwych were first settled the Council instituted an architectural competition, on which they spent a great deal of money, for the best designs for the collective and symmetrical architectural treatment of the two streets, all the results of which were allowed to lapse and to go for nothing for purely commercial reasons, viz., because it was found, or was supposed, that there would be difficulty in letting the building sites unless each tenant was allowed to build after his own fashion. The Council started by doing the very thing which they are now accused of not doing, and had not the courage and firmness to maintain their position. Had they done so, there can be no doubt that the intending lessees of building sites would have had to knock under sooner or later; it would only have been a question of a little time. Had a similar situation occurred in Paris, there is no doubt that the original requirement as to symmetrical frontages would have been rigorously maintained. But in London money rules all these things, and what promised to be a great street architecture scheme was allowed to drop for fear it should delay the letting of building sites. People are now beginning, apparently, to find out the mistake that has been made; and, as a kind of nemesis, the Council are being criticised for not doing what they did originally intend to do, and had not the firmness to carry out.

The Students' Union, Liverpool.

THE new Students' Union, Liverpool, occupies a site almost opposite the main entrance to the University. It has frontages to Bedford Street and Mount Pleasant. For many years a proposal to erect a club for students of the University was under consideration, and ultimately a scheme was prepared by Professor C. H. Reilly, M.A., A.R.I.B.A., who designed his building so that it might be erected in three portions, the available funds being insufficient for the immediate completion of the whole. The first part, containing the block facing Bedford Street, was finished last year. It comprises a billiard room on the lower ground floor, reading rooms on the ground floor, a large dining room on the first floor, and a library on the second floor. The block facing Mount Pleasant is allocated to women students; it provides a reading room, dining room, and other accommodation. A debating theatre placed centrally between these two blocks will complete the scheme. This theatre will be known as the Gilmour Hall. An illustration of it is given below. The women students' wing is shown on the Centre Plate in this issue. Both were shown at this year's Royal Academy Exhibition. The design will be seen to embody the tenets of the School of Architecture directed by Professor Reilly, and its scholarly character will be at once recognised.



The principal room of the Liverpool Students' Club.

GILMOUR HALL

C. H. Reilly, Architect.
Liverpool Buildings Liverpool.

THE STUDENTS' UNION, LIVERPOOL.

(Royal Academy Exhibition, 1912.)

A HOLIDAY COMPETITION.

THE fact that numbers of photographs of interesting architectural subjects are taken by architects when on holiday but never published is proved by the prints which continue to reach us. In the present issue we give some additional illustrations, from photographs sent in by Mr. Frederick G. Pain, of Brixton, and Mr. Everard E. Oldacre, of Hove, selected from a number received during the past week. The following particulars relate to these:

Some Sussex Cottages.

The two cottages at Twineham, Sussex, are within a stone's throw of one another, and are fairly representative of the dwellings of the prosperous and better-class yeoman of three or four hundred years ago. Good times and bad times they have seen, but for many of them unfortunately all time will soon be over, for they are rapidly disappearing. The wattle and daub of which the walls are largely composed is visibly falling out, though the massive corner posts seem to stand as solidly as ever. The great charm of these old houses arises in great measure from their homely simplicity, still characteristic in many cases of their present inhabitants. The unbroken roofs—whether of thatch, tiles, or, as in the case of one of those here illustrated, of Horsham stone slates—are always a feature, and the irregularity of surface and texture, lichen-covered as they are, results in a play of light and shade which gives these old houses so much of their attractiveness. It must be admitted, however, that the occupants of the cottages are very much more impressed by the inconvenience of the internal arrangements than by any picturesque qualities which their dwellings possess.

The old builders were quite practical enough to recognise that these heavy Horsham slabs would subject the ties and laths to an unjustifiable strain in a steeply pitched roof, and so it may be noted that where these are used the roof has a much flatter pitch than with ordinary tiles.

Twineham is a little hamlet in a Sussex backwater, consisting of a few cottages, a farm or two, and a little red brick church built about the end of the sixteenth century.

Boulby Bank, Whitby.

Boulby Bank is one of the many quaint thoroughfares in Whitby, a town noted for its picturesque streets and dwellings. From the photograph it will be seen that the

*Photo: E. E. Oldacre.*

AN OLD HOMESTEAD, TWINEHAM, SUSSEX.

*Photo: E. E. Oldacre.*

OLD COTTAGE AT TWINEHAM, SUSSEX.

*Photos: Frederick G. Pain.*

BOULBY BANK, WHITBY.

houses are approached by a flight of dilapidated stone steps, entrance being obtained from external galleries at varying levels.

These houses are of Georgian date. They are carried out in red brick, with pantile roofs, the woodwork of the galleries being painted a bright green and the sashes white. The land in front of them is used as a drying ground for the tenants.

Summer House, Edzell Castle.

Mr. Arthur Boulton sends the following particulars of this little summer house, illustrated in our issue for last week:—The ruins of Edzell Castle, once the stronghold of the Lindsays, lie about a mile to the west of the village of Edzell, in Forfarshire. The garden is on the south side of the castle and the wall is built up close to the keep on each side. At the south-west angle is the draw-well, and at the south-east is the summer house. This latter dates from the seventeenth century—about 1625. It is said that Italian workmen were employed on the building, which, judging from the Renaissance features that have been introduced, seems probable. The walls were originally divided up into panels by pilasters, but these have disappeared, leaving only the bases and caps. Panels carved in low relief representing the seasons, signs of the zodiac, the virtues, muses, etc., alternate with rows of niches for flowers.

The summer house is in the Scotch baronial style, and is covered with the old stone slates which were quarried and used in this locality before the advent of railways. The initials of the builder, D.L., are to be seen in the fine window head of the gable window.

The castle was deserted by the Lindsays in 1715 and since then has been in ruins.

Particulars of Competition.

Photographs are desired of interesting buildings or details of buildings which are out of the ordinary class of illustrations. For such photographs as we reproduce we will pay on each a fee of 5s. or 10s. 6d. (according to the value we place on them). Prints should preferably be on glossy paper. It is optional whether they are mounted or not, but the name and address of the sender must appear on the back of each. The photographs must have been taken this year. There is no stipulation as to size, but as they are for reproduction, the larger the better. It is desired also that competitors should send with their prints a short description of the work shown.

THE CASE OF THE OFFICIAL ARCHITECT.

BY RAE DOUGLAS.

YET another instance of the anomalous position of the official architect has been recently reported—no matter whence nor by whom, because neither place nor person is of the slightest material consequence to the issues involved; it is only the principle that is interesting. A certain official architect, or borough surveyor, or whatsoever he may happen to be called, had been required by his employers to design some buildings. A few members of the corporation, having failings that seem to lean to virtue's side, proposed that this special work should be rewarded with a fee of two and a half per cent. on the cost. This impulse towards generosity I reluctantly regard as a virtuous failing, because the really virtuous course would have been to insist on submitting the work to competition. The proposal to fee the official architect, however, was lost. It was in vain that the members of council who were afflicted with qualms of conscience expounded their plea that "two and a half per cent. was only half what would have had to be paid to an outside architect," and that, ergo, the council in one stroke would be acting handsomely and getting its work done cheaply.

The corporation malcontents did not (as they might

have done) deny the cheapness; but their practical minds laid fast hold of the plain fact that nothing per cent. is cheaper still. The argument that prevailed was, in effect, this: "We pay an official architect a fixed salary for doing architectural work. Why should we grant him fees in addition? Such supererogation would be clearly unfair to the unfortunate ratepayers, already groaning, . . . ; above all, such an extravagant arrangement would be eminently Unbusinesslike." In a community that is mainly controlled with catchwords, "Unbusinesslike," adroitly applied, dismisses the case, with a verdict against the other side.

Here, then, we meet once again with two hardy fallacies, the one seeking to outvie the other. The first, in assuming that two and a half per cent. is half price, suppresses the material fact—or at least the reasonable supposition—that normally the fee plus the salary would amount to more than the regulation charge of the independent or outside architect. The second is based upon what the present writer holds to be a radical misconception of the functions of the architect who is retained by a corporation at a fixed salary. The emolument, it is true, is not always sufficient to warrant complete monopoly of the architect's time and talents, and in such cases there is an expressed understanding that it is not expected to cover the designing of extensive buildings. Even so, the fee plus the salary must make the work come dearer to the corporation than it would be if they engaged an outside architect. This proposition will not seem paradoxical when it is remembered that the official architect engaged on extensive extra work is necessarily withdrawn, wholly or partly, from the routine work for which he receives his salary.

For this and for several other reasons I hold that the official architect should, as a rule, be regarded as simply an expert adviser to his employers; and if they cannot keep him sufficiently busy—in organising, superintending, and advising—they would surely be hard put to it to justify the creation or the maintenance of his post. When, however, they require him to design and carry out large undertakings, then they are putting him into a false position, and are bringing him and the corporation into unfair competition with the independent architect—or, rather, they are depriving the independent architect of the opportunity of competing at all for the work.

This is a point that corporations seldom deign to consider. It is more politic to ignore it, and it is very convenient to make use, as habitually they do, of the official architect as a shining illustration of their wisdom and economy. If he does the extra work without extra pay, this meanness is to be applauded as a saving of architects' fees, whereas it is nothing of the sort, but is rather the reverse. If, on the other hand, he is conceded an honorarium of two and a half per cent., this is to be hailed as a clever bargain for the corporation, since it shows a saving of half the fees that would have to be paid to an outside architect—a claim that would be equally reprehensible whether it were true or false, since any such "saving" fools the ratepayer, sweats the official architect, and slanders as well as defrauds the outside architect, whose fee is made to appear twice what the work can be done for by the official architect. The infrequency with which these shallow fallacies are exposed would be inexplicable if there were no truth in the beautiful theory that "the public love to be humbugged."

The wastefulness of the system is, however, a negligible matter in comparison with certain other disadvantages by which it is almost inevitably attended. That it deprives the outside architect of opportunities for winning pelf and applause may be thought to amount to merely a private and particular wrong; but in effect it is much more than that. The infliction on the community of multiplied examples of official ineptitude—of architecture that, being made to order, is therefore insipid—is by way of being a public calamity. The system tends strongly to stereotype mediocrity. If (which is inconceivable) the architect possessed positive genius,

its manifestations would scandalise his employers, who would repeat critical history by exclaiming "This will never do!" But in any case the Philistines are too strong for him, and they are always at his elbow, nagging and nibbling and stinting until finally the poor architect can hardly care to recognise the resultant mongrel design, characterless, spiritless, as his own. He is too much under the eyes of his taskmasters, to whose notions he can hardly help being sensitive and subservient.

To say that the official architect ought to be abolished would be too much in the nature of a counsel of perfection. Goodness knows that in all matters in which buildings are involved corporations are in sore and constant need of skilled advice; and it is better that what little influence an official can wield should come from a trained architect rather than from a civil or an uncivil engineer. Yet I hardly think that an official career can have much attraction for a lover of architectural art; it is more suitable for an organising mind, revelling in "strict attention to detail," and in the analysis or co-ordination of business items. Let such a practical man by all means follow his natural bent; but let him also, if he be an official, leave designing to others. Let him convince his corporation that he has quite enough to do in his advisory and supervisory capacities, and should therefore never be required to design anything of more ambitious character than a cart shed.

To these propositions the official architect cannot be expected to yield at best more than a grudging assent; for where, as so often happens, he is debarred from private practice, he finds it almost impossible to repress that ardour for creative expression which burns within every architect who is authentically called and chosen. This is the real reason why, even at the risk of being grossly overworked and underpaid, he so often goes beyond the bounds to his activity.

[We do not necessarily subscribe to the opinions expressed in this article, but the writer's view is an interesting one, and our correspondence columns are open to the discussion of it.—EDS. A. and B. J.]

HERE AND THERE.

THE other day I had the pleasure of going over one of the most delightful schools it has been my fortune to inspect. This was the new school at Downside Abbey, near Bath, designed by Mr. Leonard Stokes. Downside Abbey, as many readers will doubtless remember, is a monastic foundation of the last century. Its buildings are of varying merit. The earliest portion offers examples of Pie-Crust Gothic, with some amazing sham building (including a school block built to look like a church with nave and transepts, though the "nave" is really in two floors, comprising schoolrooms and dormitories). Then there is the dull Gothic which Mr. Hanson produced in the monastery and the first part of the Abbey Church; but the beautiful choir by the late Mr. Garner redeems all this, and since his time some good work has been done there by Mr. Walters and Mr. Comper; the latter architect has only quite recently finished the triptych in the Lady Chapel—a perfect feast of colour, and altogether a splendid example of church decoration: but it is the schools to which I want specially to refer. When completed they should be as fine an example of a modern school as could be found in the country. The whole scheme embraces a rectangle of buildings with the school hall set across the middle, so forming two quadrangles. Up to the present, however, only two sides of one quadrangle have been built, though these are quite complete in themselves. There are three floors, the ground floor being devoted to recreation, the first floor to teaching, and the top floor to sleeping. The corridors are of a most generous width and everything throughout the building is arranged to give abundance of light and fresh air. The ventilation of the classrooms is quite perfect and one can imagine under what excellent conditions the boys work.

In the recreation halls on the ground floor each boy has a large lock-up cupboard, numbered, and this number carries him throughout the whole building—his desk, bed, washing-place, and other accommodation being all similarly numbered. On the top floor one is astounded at the size of the dormitories, which have only twenty-four beds in each. The floors are laid with wood blocks, the walls finished with Keene's cement, and at the side of each bed is arranged a very neat chest of drawers with mirrors the latter forming quite an architectural feature in the room. Adjoining the dormitories are shower-bath rooms accommodating eight boys at a time, and both these and the washing rooms have asphalt floors covered with wooden gratings. I noticed a little detail in the washing room which is worth mention. A wire screen divides the room into two parts and around this screen are arranged some lines of hot-water piping for drying the towels. When towels, however, are put over round pipes they have a knack of dropping off. To overcome this defect a strip of iron about an inch wide is fixed upright on the iron piping, and this simple device effectually grips the towels and prevents them falling on the floor. I noticed many details of this kind throughout the school, which struck me as showing what careful thought has been given to the whole scheme. Plenty of funds seemed to be available for the work and what has been done so far has been done well.

There seems to be a positive mania for dubbing things the greatest, the smallest, the longest, the shortest, even known to mankind. And when the matter really gone into it is surprising how incorrect these superlatives of expression often are. We can say which is the tallest building in the world—at the present time it is the Woolworth Building now being completed in New York from Mr. Cass Gilbert's design; and there is finality about that; but who shall say, without possibility of contradiction, which is the most beautiful building in the world? That is not so much a question of fact but of opinion, and so when a popular monthly magazine attempted to get the answer from a score of eminent architects and artists a year or two ago, the result left one with a series of contradictions. Buckingham Palace just recently has been in the public eye on account of the measuring of the front which is going on with the supposed object of getting some data for the much-desired new façade, and I notice it has been called "the ugliest house in Europe." Blore's design is certainly not inspiring, and it looks the worse for its dirty coat of paint, but to call the palace "the ugliest house in Europe" is mere to indulge in a piece of clap-trap on a par with Disraeli's "finest place in Europe," when speaking of Trafalgar Square, as though the Place de la Concorde and other fine squares did not exist. And while referring to the front of Buckingham Palace I may say that I noticed a letter in the "Daily Graphic" from a Brighton correspondent who said: "Though not beautiful, the façade of the Mall is at least harmless; there are many far uglier buildings in London—the one at the opposite end of the Mall, for instance." But that, of course, is another story.

To the old Orders of Architecture must now be added a sixth—the Tassel Style. Its origin is wreathed in mystery, but its visible presence is abroad in both London and the provinces. Along Oxford Street, in the Mall, on Piccadilly, in a score of places in London I see it, and, as one example among many in the provinces, recall a large new building in Birmingham, on which it is displayed to perfection. The style consists essentially in putting dangling tassels of stone or wood in even conceivable place—the more the merrier. Swollen to a good size, the tassel stands menacingly over entrances; less formidable, it drops gracefully down from the capitals of columns; and in its weakest form it hides itself in the arms of electric-light fixtures. Truly the devices of architects are passing strange.

UBIQUE.



"CLAREMONT," BROADMOOR, COLORADO SPRINGS, COLORADO: WEST FRONT.

T. MACLAREN AND C. E. THOMAS, ARCHITECTS.

REPLICA OF THE GRAND TRIANON.

"Claremont," Colorado Springs, is the Californian residence of C. A. Baldwin, sq., and is interesting as combining some of the features of modern architectural design in America with those of French architecture of the best period. The plan is typical of current American practice, exhibiting great symmetry and a simple spaciousness. The entrance is centrally placed on the main front and leads to a circular vestibule 21 ft. in diameter, from which access is gained by lobby and hall to the chief rooms ranged around a court. The elevation to this court is frankly a close copy of the Grand Trianon at Versailles (designed by Mansart in 1687), this result having been desired by the owner; and it was with a view to reproducing faithfully the design and detail of the Grand Trianon that Mr. T. MacLaren, a member of the firm of architects entrusted with the work, paid a special visit to Versailles in order to make sketches of the original.

The exterior of the building is of dull-cream white terra-cotta and exhibits the perfection of modelling and workmanship that material.

The large rooms facing the court are of average height of 17 ft., the walls of the living room (which is a splendid apartment, measuring 49 ft. by 25 ft.) being lined with red silk damask, with frieze and cornice in plaster. The salon and bedroom are richly panelled, the walls of the latter being partially covered with green silk damask. The floors in the large rooms are of "De la Reine" design in oak, and the fittings throughout are of the same character. The detail, both on the exterior façades and within the building, like the rest of the design, essentially French, and was, in fact, carried out by Paris firms, the whole being extremely sumptuous, yet delicate and refined in effect. The house is a tribute to the ability of those who executed it, though, naturally, in view of the fact that it is more or less a copy of another building, it, to that extent, loses caste as a contribution to modern architecture. It is, however, a specially interesting example of what can be done if only sufficient funds are available.

THE WONDER OF BEAUVAIS.

The French Gothic builders tended to conceive the whole church as if it were a single organism, and, carrying out this tendency with the French passion for logic, they

could only end in the disaster of Beauvais. The choir of Beauvais Cathedral is the climax and the splendid failure of French Gothic. The Gothic lasted for two centuries more, but it was defeated at Beauvais, and Beauvais explains why it never became a stable style and was at last violently superseded by the southern architecture of the Renaissance. The failure was not artistic so much as practical, and architecture is the most practical of all arts. It is waste of time to write a play that cannot be acted, but it is sheer madness to attempt a building that cannot be built, and Beauvais Cathedral could not be built. The choir was begun in the middle of the thirteenth century and was meant to surpass all churches in the world. It was finished in less than thirty years, and

twelve years afterwards the vault fell in, making a ruin of the church.

By this time, 1284, the ardour in church building had begun to flag. The Gothic had gone as far as it could go in structural discovery and adventure; and it was an architecture that lived by discovery and adventure.

Nothing was done, some say, for fifty years, and the church remained a ruin. Be that as it may, after the vaulting fell the bays of the choir were doubled in number and halved in width by the insertion of new piers in the middle of each bay. This work was very skilfully done, though it must have made the choir look less miraculous; it probably prevented it from tumbling down altogether—and a miracle of architecture ceases to be one if it



"CLAREMONT," COLORADO: DETAIL OF WING.



"CLAREMONT," COLORADO: VIEW FROM SOUTH-EAST. T. MACLAREN AND C. E. THOMAS, ARCHITECTS.

tumbles down. Then came the long period of anarchy and war in France, and nothing more was done until 1500.

Between 1500 and 1548 the transepts were built, and then, instead of continuing the nave, the architect, Jean Vast, put a flèche over the crossing higher than the highest of the Pyramids. This was the time of the High Renaissance, and this architect boasted that his spire was a greater wonder than Michel Angelo's dome at St. Peter's. So we may regard it as the last defiance of the dying architecture of the north against the triumphant architecture of the south. But the dome of St. Peter's remains; the spire of Beauvais fell in five years after it was built. All the money that remained was spent in repairing the damage, and now we see only the choir and transepts, with the west end, where the nave ought to begin, boarded up like an unfinished monster building in a London street.

The French by the middle of the thirteenth century were masons so accomplished that they could play with stone. They were no longer kept within bonds by the difficulty of their material, and they thought of a church, not as a building made up of stones piled one upon another, but as a work of pure expression, like a piece of music or sculpture. Thus Beauvais is an attempt to turn architecture into absolute art, and it failed because architecture cannot be an absolute art, because it has material as well as technical limitations. As architecture it is a failure, not only because it could not be finished, but because it looks as if it could not endure. But with all its insecurity and incompleteness it is sublime. Inside, one forgets even the insecurity, for, like all French interiors, it is a magnificent illusion, and the most magnificent of all of them.

Nowhere has a geometrical pattern of window-tracery been so perfectly fitted to the whole design of an apse. Nowhere have triforium and clerestory been so delicately combined and yet divided. The main shafts that rise between the windows are here both bolder and finer than at Amiens. The detail is more exquisite and yet more perfectly subordinated. In fact the interior of the choir is a perfect combination of science and beauty.

Outside, of course, the failure is evident.

But it seems a failure noble and pathetic rather than arrogant. We feel, after all, that the designer of the choir was attempting an impossible feat of expression, not of ostentation. Again, the apse is more beautiful than the apse of Amiens, and the roof looks lighter because the balustrade round it is better managed. At Beauvais all the detail is both simpler and more exquisite. The buttresses and the windows are enormously long and thin. It has been said that the whole church looks as if it were standing upon tiptoe. But this is unfair. There is restlessness and strain; but they are the restlessness and strain of genius overtaken by the task of expression, not of mere display. The transept ends are among the noblest works of the last flamboyant when Gothic suddenly took on a new vigour before it was superseded. The great southern façade is an overwhelming work, covered with intricacies of carving which are certainly not rational, but which look neither vulgar nor absurd.

Beauvais Cathedral is a monument of

momentary and extravagant energy that led nowhere and exhausted itself in fruitless effort. But, because it expresses that energy and all those overweening dreams, it is beautiful with a strange irrational beauty, and pathetic like a story of mistaken enterprise and wasted heroism.

[Extracts from an article in the "Times."]

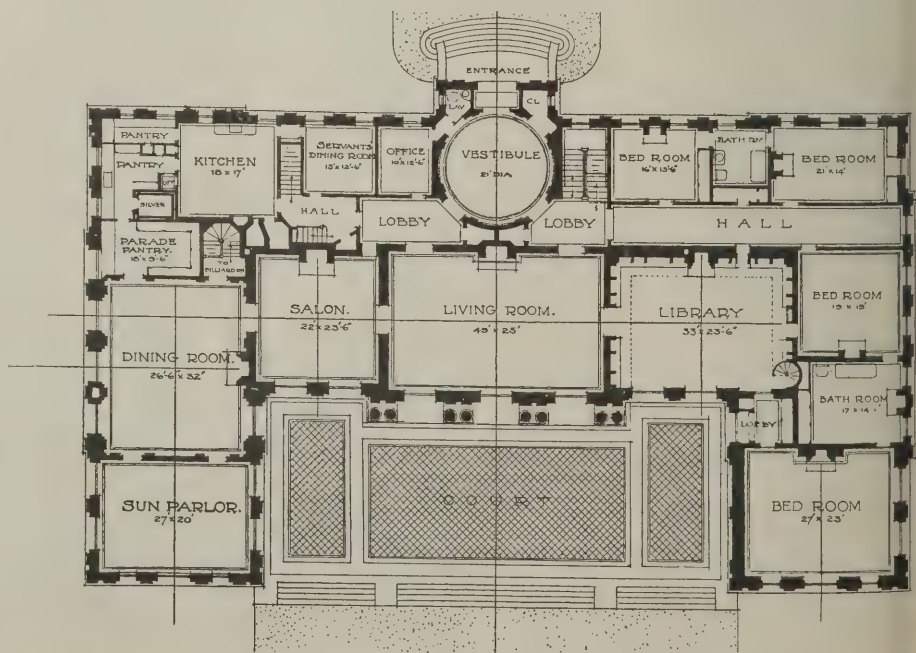
OBITUARY.

Mr. George Maides.

Mr. George Maides, senior partner of the firm of Messrs. Maides and Harper, builders and decorators, of Croydon, whose death was announced in our issue for last week, died after a very short illness from septic poisoning.

Mr. B. H. Mander.

The late Mr. B. H. Mander, of the firm of Mander Brothers, paint and varnish manufacturers, Wolverhampton, left an estate which has been valued at £115,373 gross.



"CLAREMONT," COLORADO: GROUND-FLOOR PLAN

MAKING LIME PUTTY.

BY ALFRED B. SEARLE.

There is much truth in the oft-expressed thought that the mortar of to-day is not nearly so good as that made four or five generations ago, the chief reason being that we are in too much of a hurry at the present time. In earlier times, when things went more slowly, the man in charge of the mortar slaked the lime with care and skill, and gave it plenty of time in which to mature into a properly constituted putty. Nowadays, the lime may be delivered early one morning and may be in the form of mortar and in the walling before the same day's work is done. Nor is it only in cottage property and other work associated with the name of the celebrated Mr. Jerry that this sort of thing occurs, for the writer has observed it more than once on buildings of great public interest and importance. A delay occurs in the delivery of the lime and to prevent the bricklayers waiting the men making the mortar are just ordered to hurry up the slaking of the lime. Modern mortar mills are also responsible for further slackness in this same direction, for many builders have an idea that the mill can crush any lime which may have escaped slaking in the ordinary manner. Some day there will be a serious collapse, an investigation will be demanded, and "something" will happen to someone or other.

The maturing of lime putty is not a matter of a few hours, but of days, and it cannot be hurried without being spoiled. Consequently, it is necessary for as much of the conversion as possible to be done before the material reaches the site. If the whole of the changes are to occur on the building site there is bound to be serious trouble sooner or later.

Freshly-burned lime is one of the most sensitive substances used on a large scale, and it requires to be treated with great skill if the most satisfactory results are to be secured. If allowed to remain long in the air it absorbs carbon dioxide from the atmosphere and is spoiled for mortar making in proportion to the amount of absorption which has taken place. The lime must therefore be supplied in a fresh condition so that it will, when mixed with water, make a really first-class putty.

The ordinary method of slaking lime by sprinkling water on it is quite satisfactory if carefully done, and provided that sufficient time is given for the water to distribute itself quite uniformly throughout the mass. This distribution takes a long time—ten days at least—and a longer time, say three weeks, is far better. Hence any undue hurry in mixing the freshly slaked lime with the other ingredients of the mortar will necessarily result in the lime being very imperfectly slaked and it will usually be found to contain comparatively large pieces of lime which have not been slaked.

The author has on numerous occasions taken a sample of mortar weighing about 6 lbs. from the hod and has placed it on a sieve with apertures of 1-16 in. diameter and run a stream of water over the material so as to wash as much as will pass through the sieve as rapidly as possible. The residue, when the lime putty has not been fully matured, will contain a considerable number of pieces of lime, and these cannot be all that existed in the mortar, for the treatment with water naturally breaks up some of them, no matter how quickly the washing may be effected. A simple and rather crude test of this kind will show in an unmistakable manner the effect of insufficient time

in the production of the putty. These lumps of unslaked lime cannot do their proper work in binding the sand, etc., in the mortar, so that the bonding material is weaker than it should be, and serious consequences may follow. In addition to this, the lumps usually absorb water from the air and expand, so that the mortar presents an "ugly" blown appearance, and its adhesive power is further weakened by the expansion which occurs and is followed by the loss of the lime particle, which crumbles after it has become fully slaked.

Lime which has been kept in the lump state for more than three days is of less value than fresh lime on account of the carbonation it undergoes in contact with the atmosphere, so that the use of really fresh lime is imperative to the builder, provided that he has to use it in the lump state and to slake it on the building site.

This difficulty has, however, been completely overcome by the use of machinery for slaking the lime and supplying it to the builder in such a form that it only needs to be mixed with water and left for twenty-four hours to be perfectly ready for use. This "hydrated lime," as it is called, is usually prepared at the works, where the limestone is produced and is made by treating the quicklime with steam instead of water, so that the slaking takes place

without unduly wetting the lime, and a perfectly dry powder is produced. The slaking is aided by mechanical stirrers or paddles and the product is more uniform than slaked lime produced in any other manner, and is far superior to ground lime. This "hydrated lime" is sold in bags and in the United States it has gained enormously in popularity during the past few years on account of its great convenience and the saving of time it effects. Moreover, its use enables a somewhat smaller proportion of lime to be used, as the hydrated product is better made and "goes further" than the putty made by hand-slaking.

In this country "hydrated lime" is known to but few builders and there is a good opportunity for money-making in a small way awaiting the man who is prepared to erect a plant to supply it in several of our larger towns. It is found to keep without spoiling for a much longer time than does quick lime, and it may therefore be sent over long distances by rail, provided that it is kept dry. It does not rot the bags and has no appreciable effects on the skin of those handling it—a great convenience to many workers in the building trade. Being ready for use it may, for most purposes, be put direct into the mortar mill and ground up with the other materials.



"CLAREMONT," COLORADO: DETAIL OF DINING-ROOM.

T. MACLAREN AND C. E. THOMAS, ARCHITECTS.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents.

Correspondents are asked to be brief and to write on one side only of the paper.

The Early Nineteenth Century House.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Your article specially relative to Guernsey will probably appeal to a good many people who feel attracted, perhaps somewhat shyly, by the stucco houses erected shortly after the year 1800 in many parts of England and of which there are many good examples in London.

Regent Street and Regent's Park still provide us with some specimens of the more imposing class of work, but many smaller and less ornate houses are in evidence in what may be called the inner suburbs, built for occupiers of moderate means who were obliged to be within easy reach of business, before cheap means of transit were evolved. Take, for instance, the houses in St. Peter's Square, Hammersmith. These are nearly all arranged in groups of three, as shown by the accompanying photograph, though there are others in the same borough in pairs and detached. In most cases excellently-designed cast-iron railings are happily introduced for balconies and verandahs, while pines, eagles, dogs, and lions add a touch of taste not objectionable, even if only of painted cement. The careful proportions of the front elevation fall off sadly at the back, where dull brickwork usually appears.

The joinery of that period was good and the sashes and doors were solid. The houses were carefully planned though commonplace, and the rooms are of a comfortable size, proportion, and height, and well lighted. There is an external air of simple comfort which accords well with the internal arrangements, subject to the addition of modern bathrooms, lavatories, and larders.

Would it not be an interesting record if you were to publish a series of photographs of the different classes of house of this period, together with some details of the ironwork?

A. O. COLLARD, F.R.I.B.A.

London, W.C.

[Mr. Collard's suggestion appeals to us, and we should be glad if readers would forward any drawings or photographs they have of interesting early nineteenth-century houses for publication.—EDS. A. and B. J.]

*Sedilia in St. Fagan's Church,
Glamorganshire.*

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In the note on page 202 of your issue for August 21st, under the heading "Details, Old and New," you mention that no definite information about the work shown—namely, the sedilia in St. Fagan's Church, Glamorganshire—is available, but that the proportions are especially fine. One is referred to the two full-page illustrations. There is a photograph showing, almost in full elevation, two bays of the work, and on the next page is given a measured drawing of the whole.

Upon the assumption that the proportions are "especially fine," it seems doubtful whether the two illustrations should have been given, as they are confusing. Either the photograph is faked, or else the drawing is hopelessly inaccurate. The photograph shows, for instance, bold and thoughtful work with a freedom and variety of detail which is emphasised by

heavily-jointed masonry all round. The drawing, however, fails in many ways to represent anything like the original, particularly in that the surrounding masonry is drawn with thin regular coursed work ranging with the carved stonework of the sedilia proper, and the carving in the spandrels has got sadly misplaced. A circular feature appears in the drawing over the central column, but in the photograph it is over the next column. There are also obvious discrepancies between the line of the points of the cuspings, the spacings between the carved heads and the tops of the column caps, the proportion of the caps to the height of the column, etc.

One feels that the time spent, in this case, on the printing, and even the drawing, would have been more usefully employed in preparing, say, an enlarged drawing of some of the detail. This is assuming that the student had no time to take full measurements.

CHAS. A. DAUBNEY, A.R.I.B.A.

London, S.E.

[The drawing in question is certainly hard and mechanical, but it serves its purpose in showing the general scheme of the work. The photograph is not "faked" in the slightest degree, and must be taken as exactly representing the stonework, the carving on which could not be rendered with equal effect by any line drawing. There is certain point in our correspondent's criticism, but we think he is pushing it too far.—EDS. A. and B. J.]

FIRE PROTECTION AT ST. PAUL'S.

New Installation.

The Dean and Chapter of St. Paul's Cathedral, after consultation with the cathedral architect, Mr. Mervyn E. Macartney, F.R.I.B.A., are undertaking an extensive installation to protect the cathedral from any outbreak of fire. The installation is being carried out by Messrs. Merryweather and Sons.

Several problems of unusual difficulty have had to be faced. The great height of the fabric has rendered necessary some means of raising water beyond what is generally available to the London Fire Brigade. It is true that in an experiment a few months ago two motor engines, working in unison, succeeded in throwing a jet well over the main dome, but the conditions then were such as would hardly prevail in times of emergency. The new system, which will bring every portion of the building well within the reach of powerful jets of water, involves the use of an hydraulic accumulator to be worked from the Hydraulic Supply Company's mains; and a tank in the lantern will supplement this system.

In each corner of the cathedral 4 in. cast-iron pipes (carefully protected from frost with a covering of cowhair felt and canvas) will be carried to the 60 ft. or "cornice" level. Similar pipes will also extend into the crypt. The main in the north-east corner will also be carried to the organ loft, and another branch taken to the level below the colonnade. From the latter position a pipe will be taken up outside the building well above the main roofs to the level of the stone gallery. Passing through this gallery, it will continue to rise to the level of the base of the cone and then re-enter the building so as to feed the hydrants in the dome.

From this main a slightly smaller wrought-iron pipe (of 3 in. diameter) will be carried up the face of the cone to the Golden Gallery, and continued through

this gallery into the lantern above. There a connection will be established with the existing tank.

New hydrants will be fitted to the main pipes at the various levels, and the majority of the hydrants already existing will also be utilised. The new scheme will include twenty-six new hydrants and over 2,000 ft. of hose and necessary fittings, as well as a special installation of fire alarms warning the public outside and the several officers in and beneath the building.

The most striking feature of the new installation is what is known as a dry main. This will be laid from the outer wall of the cathedral opposite the main stairs, and will rise to a height of 60 ft. from the nave floor, outlets being provided at intervals throughout the building. No water will be permanently kept in this main, the idea being that in case of fire the London Fire Brigade when they arrive will be able to couple their engines with the outside ends. Simultaneously they will link short lines of hose with the outlets nearest the seat of fire, and thereby obviate the laying of long lines of hose direct from the engines. Greater efficiency in actual working and a considerable saving of time are expected from this arrangement.

RURAL BUILDING BY-LAWS.

Suggested Modification.

During the past week the Local Government Board have circularised district councils on the question of by-laws made under section 157 of the Public Health Act, 1875, in force in many districts in relation to their applicability to new forms of construction and new building materials. It has been alleged that, particularly in some rural districts, the requirements of the by-laws exercise an unduly restrictive effect upon the erection of small dwelling-houses.

Again, the ordinary clauses for the laying out of roads do not permit some of the classes of roadways which have been designed in some "garden cities," or the exceptional arrangements which are demanded in certain cases by the configuration of the ground. Local authorities have from time to time applied to the Board for approval of by-laws appropriate to such conditions or circumstances. Other local authorities have obtained express statutory powers with similar objects in view, but there are many in whose districts by-laws have been in force practically unaltered over a long period of years, by-laws which were framed before the modern methods and materials came into vogue and which consequently are not so drawn as to allow or to regulate their use.

The Board points out that it behoves all local authorities from time to time to consider the terms of the by-laws in force in their areas, so as to see that they are sufficient to meet present-day requirements and that it will be happy to render assistance to any authorities who may desire to modify their existing by-laws by referring them to clauses which have been embodied in series already adopted, or by such other suggestions as may be practicable.

Surfacing Material for Concrete Floors

With reference to the inquiry published in our last issue concerning the finishing of garage floor surfaces, we are informed that a suitable material for this purpose is Glidden's concrete floor dressing, for which the sole consignees for Great Britain are Messrs. Fassett and Johnson 86, Clerkenwell Road, London, E.C.



[Photos: Architects' and Builders' Journal.]

EARLY NINETEENTH-CENTURY HOUSES IN ST. PETER'S SQUARE, HAMMERSMITH, LONDON, W.

SEWAGE PLANTS FOR COUNTRY DISTRICTS.

BY H. MACLEAN WILSON, M.D., B.Sc.

The problem of how to deal with the sewage of a detached house, or small groups of houses, in an isolated country district is one that offers constant difficulty to the architect. The following details of a satisfactory solution of the trouble should therefore be found of much practical value.

IN selecting a method for the purification of the sewage of a single house or a small group of houses, attention must be given to many points which do not greatly affect larger works. The scheme adopted must not be costly; the apparatus must be as simple as possible so as not to need skilled supervision; the works must be nearly automatic in action and must require a minimum of attention. To secure a continuously satisfactory effluent and at the same time provide works which comply with these conditions is not an easy problem and many attempts have been made to solve it, not always successfully. In view of the difficulties the following particulars of a satisfactory plant may be useful to those who have to deal with such cases.

A Specific Example.

Perhaps the best way of describing the method of treatment is to set out what works would be required for the domestic sewage of a small hamlet containing 100 persons. The size of the works must, of course, be based on the flow of sewage and this will be found to vary from four or five gallons per head per day in a country village where water is drawn from wells, up to thirty or forty gallons or more in the case of villa property with a constant supply of water and provided with baths and water-closets. In all cases roof-water, and any other discharges of clean water, should be kept out of the drains, as their admission would upset the treatment of the sewage. If for convenience any such discharges are received, the disposal works must be made proportionately larger to cope with the increased volume. In a small installation such as this there should be no screens, since these would not be likely to receive proper attention, and any gross solids which they would intercept can quite easily be dealt with in the tanks.

The Septic Tank.

The sewage should be received in a septic tank having a capacity equal to thirty-six hours' flow. This may be considered rather too large, but the available space in such a tank soon diminishes, from the accumulation of sludge. The septic tank should be at least five feet in depth, so as to give room for the deposit of sludge and for the formation of a thick scum. The inlet and outlet pipes (and there should be at least two of each in order to reduce the velocity of flow as much as possible) should dip two feet under the water level so that any scum forming in the tanks may be undisturbed by the flow of sewage. The tank should be constructed of brick and cement, or concrete, or other impervious material, and the floor should slope to one corner so as to permit of easy cleansing. If there is a sufficient fall to an available site a valve should be provided at this lowest corner through which to run the sludge on to the surface of the ground or on to a prepared sludge filter. If this cannot be done the sludge must be removed from the tank at intervals by means of a diaphragm or other pump. It is usually preferable to cover the tank

over, but it is not necessary that the covering should be airtight. It can quite well be made with railway sleepers overlaid with soil and covered with turf. As there is certain to be a considerable evolution of gas in such a tank, it is absolutely necessary to cut off the house drains by an intercepting trap and to ventilate the tank by a six-inch pipe, which may be run up the trunk of some neighbouring tree. In an installation so small as this there is no necessity to have the septic tank in duplicate, as it can quite well be cleaned out while the sewage is running into it; but if land is available a by-pass should be provided on the drain before it reaches the tank, so that the sewage can be treated temporarily by irrigation while the tank is being cleaned out.

Country House Sewage.

At large country houses difficulty may be caused by extreme variations in the flow of sewage. In such cases the number of persons living in the house may vary from two or three in the winter months to twenty or thirty in the summer, and the works must be made capable of dealing with the sewage of the maximum number; but a septic tank designed for the sewage of thirty persons would be too large for the sewage of two or three, and would be apt to make the sewage in the latter case over-septic and very offensive. In extreme cases it may be advisable to have two septic tanks, one large and one small, and to use them alternatively. Where the variations in flow are smaller the outlet pipe from the septic tank can be throttled so as to equalise the flow over the twenty-four

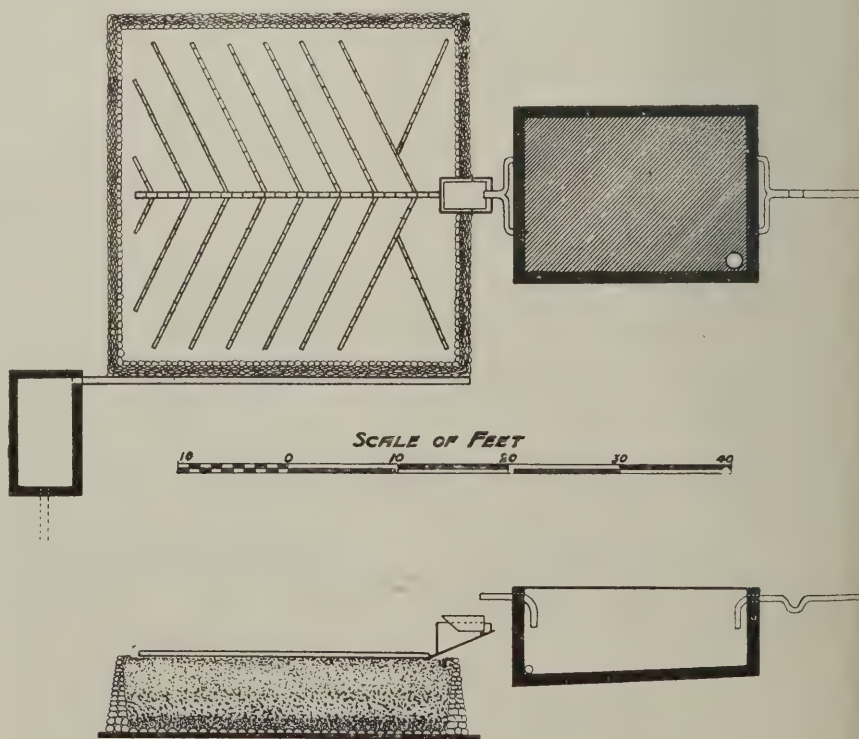
hours, or clean water can be turned into the house drains at the time when the flow of sewage is small to make it up to the average.

The Filter.

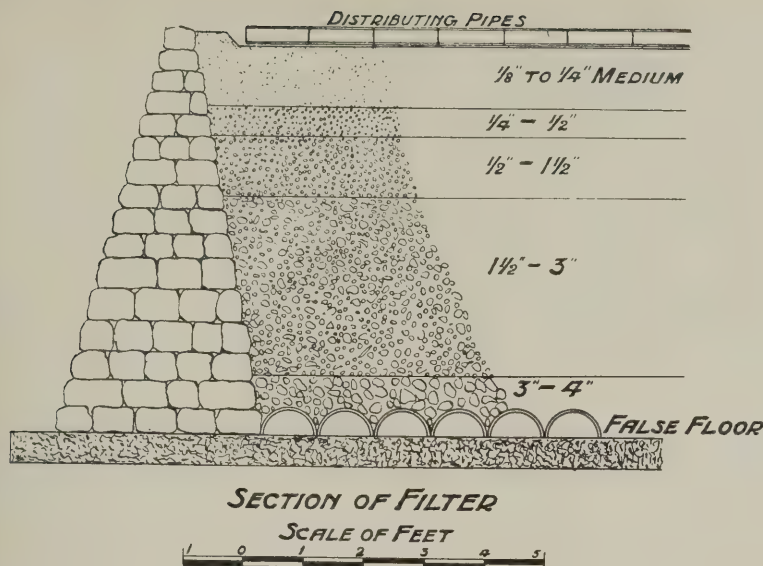
The filter for dealing with the tank effluent is the most important part of the works and should be constructed with extreme care. If properly made it should be a permanent structure. Its floor should be of some impervious material, preferably of concrete, which should be laid with considerable slope to an outfall channel which should run along one side of the filter. A false floor should be provided and may be constructed of slates or flat tiles supported on rows of bricks set six inches apart, or, better still, of specially made half-pipes or square tiles on feet, such as those of Naylor Brothers, Denby Dale, or Stiff and Co., Birmingham. In the case under consideration, where the area of filter is so small, it is not absolutely necessary to provide a false floor, but when this is omitted special care must be taken to have the bottom layer of filtering material in large pieces so as to permit of the escape of finely divided solids with the effluent. Instead of the false floor a layer of stone, arranged in the same way as is usual in making the foundation of a road, may be laid on the concrete floor. In any case care should be taken to arrange matters so as to facilitate the free escape of the effluent with its suspended solids to the outfall channel.

Filters Above Ground.

When the filter stands above ground the walls may be of pigeon-holed brickwork, or dry stone rubble, or of slag or clinker. If put together without mortar they should be built vertical on the inside, and with a batter of one in three on the outside, as in winter the sewage of the outer portion of the filter is liable to freeze and thrust the wall outwards. If the space available is limited and a vertical dry rubble wall is preferred, it can be strengthened sufficiently by using vertical wood battens placed eighteen inches apart on the outside of the wall and binding them together



PLAN AND SECTION OF SEPTIC TANK, FILTER AND HUMUS TANK.



by strong wire. There is no necessity for the filter to stand above ground; it is rather advisable to have it under ground level, as it is then hidden from sight and protected to a great extent from frosty winds, but when sunk in the ground it should be constructed with the side towards the outlet channel free, so that air can easily enter both by the false floor and through the wall on that side. The shape of the filter is immaterial and will depend upon the available site.

The Filtering Medium.

The filtering medium used may be of any resisting material, such as broken stone, gravel, slag, or clinker—such a substance in fact as will not readily break down under the alternate wetting and drying to which it is exposed. The depth of the filter is also immaterial, but, preferably, should not be less than three feet nor more than six feet. The most important point is the proper filling of the filter, and the medium must be graded with great care. In a filter six feet in depth the first layer in the bottom, on the false floor, should consist of hand-picked pieces three to four inches in diameter to the depth of six inches; above this should come a three-foot layer consisting of pieces between three inches and one-and-a-half inches in size; then a twelve-inch layer of material which has passed through a one-and-a-half-inch riddle and has been kept back by a half-inch riddle; followed by a six-inch layer of sizes from half-inch to quarter-inch; and finally on the surface there should be a twelve-inch layer of fine material, composed of particles which have passed through a quarter-inch mesh and been retained by a mesh of one-eighth inch. A filter of three feet depth should be constructed like the upper three feet of the above. The surface layer of fine material should be banked round the sides of the filter to a height of three inches or so above the general level, and to a width of six inches within the external wall so as to prevent any liquid overflowing. This arrangement yields another very important advantage, for it keeps the outer surface of the filter wall dry, and this Professor Dunbar has found greatly to diminish the development of flies, which in some cases might cause trouble.

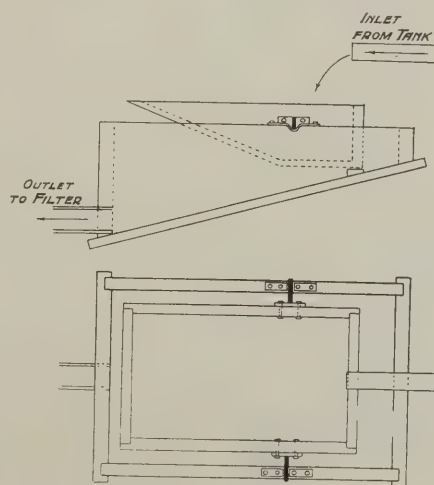
The Question of Capacity.

The area of filter required depends upon the depth of filtering material, and of course upon the quantity of sewage to be treated, and in all cases a substantial mar-

gin should be allowed, as the extra cost of adding 50 per cent. to the capacity of works so small is only a trifling matter. The size of the filter should be calculated so as to allow at least one cube yard of filtering material for every fifty gallons of the daily flow of sewage, or even more than this may be allowed, for it must be borne in mind that in an installation of this kind the work is all done in ten or twelve hours of each day, and the filter is likely to be idle for the rest of the day. The suggested area of a six-foot filter in the case under consideration would therefore only be five square yards when the daily flow of sewage is five gallons per head, of forty square yards when the flow is forty gallons; but as the sewage in the former case would obviously be of a stronger character, and as the necessary area is so small, it would be better to double it in that case.

The Tipper.

As has been stated, the tank effluent, if passed on to the surface of such a filter directly and continuously, will sink at once through the material and only reach the parts more distant from the inlet after the filter service has become partially clogged. To obviate this the tank effluent must be applied in gushes, and this object is attained by the use of a tipper, such as are made by Messrs. Ham, Baker, and Co., Ltd., Westminster; Messrs. Tuke and Bell, Ltd., 69, Leadenhall Street, London, E.C.; and Mr. W. E. Farrer, Cambridge Street, Birmingham; but for a small installation



WOODEN TIPPER.

it can be made of creosoted wood by any village carpenter. The capacity of the tipper should be according to the flow of sewage and area of filter. For a filter of ten square yards in area and a flow of 500 gallons per day a tipper of two gallons would be ample; for a filter of forty square yards and a flow of 4,000 gallons it should be of five gallons capacity. This would give at each discharge a quantity of one-fifth to one-eighth gallon of sewage per square yard of filter. These tippers are sometimes made in a double form, so that if placed across the middle of a filter they discharge first on one side and then on the other. As an apparatus like this is liable to be affected by frost, the tipper should be protected by a wooden cover or, where the circumstances are suitable, should be placed underground in a manhole.

Distribution of the Liquid.

The better to ensure the distribution of the liquid over the whole of the filter, it is necessary to provide special channels to convey it to all parts of the surface, and this can best be done by laying a series of level drains of ordinary butt-jointed field pipes in herring-bone fashion upon the surface; or, better still, glazed pipes of the same shape, for the field pipes are very liable to be injured by frost. Into these pipe channels the tank effluent is discharged in intermittent flushes by the tipper, and the liquid is distributed over the whole of the filter, a little escaping by every joint in the pipes. Every discharge is thus absorbed by the top layer of fine material, which takes it up like a sponge and gives it out slowly from the under surface to percolate gradually throughout the whole of the body of the filter. In the effluent from a filter of this kind there is at times a considerable quantity of humus or fine suspended solids, and these should be removed either by passing the effluent through a small settling tank, in this case of some 50 to 100 gallons capacity, or through a shallow filter of three or four inches of sand lying upon six inches of gravel, or, better still, over a small area of grass land. The liquid as it comes from the percolating filter is free from offensive matters and will greatly stimulate the growth of grass.

[The foregoing particulars have been abstracted from a paper read by Dr. Wilson before the recent Congress of the Royal Sanitary Institute at York.]

THE NEW WOOLWICH TUNNEL.

The new foot passenger tunnel under the Thames at Woolwich, which has cost the London County Council £86,000, will be opened to the public in October. The tunnel is 11 ft. 9 in. in diameter, is 500 yds. long, and passes under the river at the point where the free ferry crosses. A hundred and twenty-nine steps lead down from the surface on the north side to the tunnel, and about a hundred on the south. As the work of climbing the stairs would be arduous, the council have installed lifts at a cost of £5,000. At first it was proposed to build the tunnel 30 ft. below low water, so as to allow a free passage for big ships. The Port of London Authority tried to compel the County Council to drop it another 10 ft., which would have cost an extra £10,000. The council, however, decided to increase the depth by 3 ft., leaving 33 ft. of the river to be dredged above the crown of the tunnel.

The opening of the tunnel will considerably lighten the work of the free ferry.

THE POSITION OF THE HEATING ENGINEER AS A SUB-CONTRACTOR.

In the last issue of the "Journal of the National Association of Master Heating and Domestic Engineers," published quarterly, we notice an article by Mr. S. Saunders on "The Position of Heating Engineers as Sub-Contractors to Builders and the Risks to which They are Liable." This sets out the case of the sub-contractor very clearly, and we think it of interest therefore to give the following extracts:

The heating trade generally has for some time been very much concerned about the hazardous position, financially, in which its members are often placed by having to stand as sub-contractors to the building contractor in respect of work done in the installation of heating apparatus and domestic hot-water supply, ventilation, etc. The keen competition and consequent low prices ruling do not allow a margin to cover the loss and risk which are entailed by this practice, especially as, during late years, so many building contractors (many of whom were firms of long standing) have unexpectedly gone into liquidation.

Even when eventually paid, the accounts, especially balances, are frequently withheld on some pretext or other which has nothing to do with the heating engineer's contract. The builder often

claims that he has not had his final settlement, and therefore cannot pay the heating engineer, although payments intended by the architect to cover the account of the engineer have been received by the builder.

The claim of builder's commission is often a matter of unpleasant dispute. This is frequently claimed by the building contractor as a condition of payment to the heating engineer, even when the full amount has been certified and paid on a clear proviso in the specification that the sums included for heating work are to be paid in full and that any profit required must be added.

The wrong position of "sub-contractor" into which the heating engineer is sometimes forced is emphasised by the fact that the building contractor has nothing to do with his appointment or the arrangement of his work; indeed, the heating engineer is frequently selected and his contract settled upon before the builder is appointed or the structural work finally laid out, as provision has to be made to accommodate the scheme of the heating engineer. Heating engineers are therefore quoting and working on entirely different lines and under independent conditions as compared with other trades.

The ruling of the court in the case of the *Crittall Manufacturing Co., Ltd., versus the London County Council* held that the final responsibility for the payment of a special contractor, appointed

under the circumstances referred to, rests with the proprietor, and that the building contractor is in the position of trustee or agent, the architect being in the position of arbitrator. Although this is now considered to be the law, it is very desirable that the proper position of the heating engineer should be clearly recognised and defined before entering into contracts, and that his interests should be safeguarded without the unpleasantness and delay of litigation.

In view of these various considerations the National Association of Master Heating and Domestic Engineers are very anxious to obtain the united co-operation of the architects throughout the country in placing the heating contractor in a safe position and guarding against delay of payments or loss through the intermediary dealings of the building contractor.

For this purpose it is suggested that architects be asked to recognise the following proposals as being the proper methods for dealing with this subject:

(a) *Separate Contracts.*

These would indicate that the heating engineer is directly responsible to the architect's principal for the quality and success of his work, and the latter would have direct control of the heating engineer without the interference of third parties or mixing up of accounts.

(b) *Guarantees.*

The architect should recognise the association's official form of agreement between the heating engineer and the building contractor and require the latter to sign the same, also signing it himself in the places provided for the purpose. The special clause relating to the subject is as follows:

In the event of payment not being made by the builders to the engineers within fourteen days from the presentation of the architect's certificate for any installation or retention money, or in the event of the failure, compounding with creditors or bankruptcy of the builders, then, and in any of such cases, the builders hereby agree that the amount then due, and future payments when due, shall be paid by the employers direct to the engineers, and that such amounts shall be deducted in full from any payments due, or becoming due at a future date, to the builders from the employers.

(c) *Notice of Payment.*

Further, when issuing a certificate to the building contractor, the architect should state in writing, on the certificate, the name of the heating engineer and amount of money to be paid to him for which the covering certificate provides, and also notify the heating engineer that this certificate has been issued and this amount has been ear-marked thereon. The heating engineer can then take steps to obtain payment, and the said certificate forms documentary evidence in the event of court proceedings.

DETAILS—OLD AND NEW.—LI

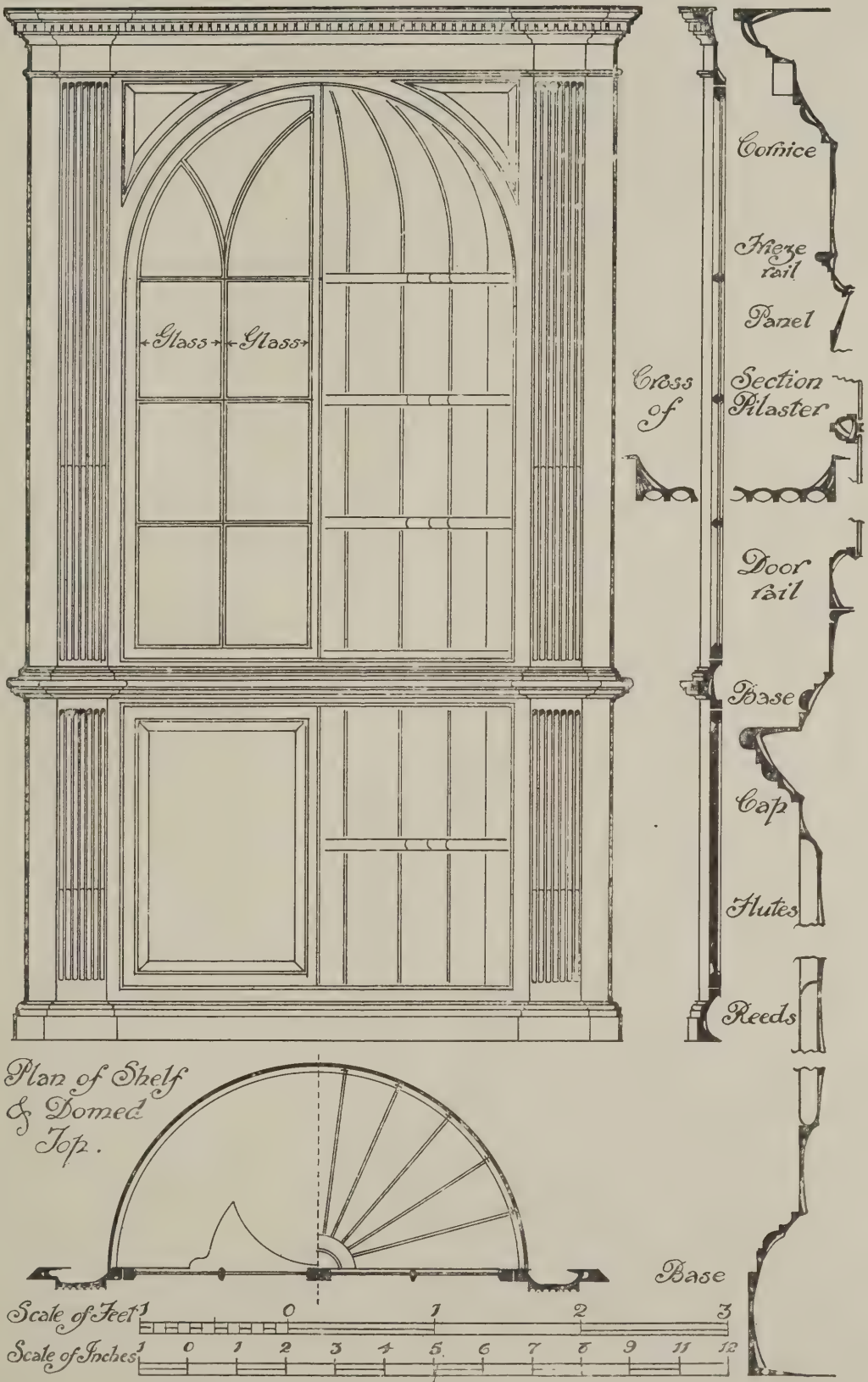
A Mahogany Corner Cabinet.

Corner cabinets and recess cabinets constructed to harmonise with the panelling or decoration of a room are often met with in late eighteenth-century work and the designs are nearly always of an architectural character. Generally they are fitted with glazed doors in the upper part, for the purpose of showing pieces of china or other articles. The example here given, although by no means ornate, is a good illustration of the manner in which Classic details can be adapted to furniture.

The upper doors are divided into small panels after the style of Chippendale. The interior is circular on plan, finishing in the form of a cove or dome at the top. The plinth appears to have been cut down in height since the cabinet was made.



A MAHOGANY CORNER CABINET.



A MAHOGANY CORNER CABINET.

COMPETITIONS.

The Soane Medallion.

The attention of intending competitors for the Soane Medallion is called to the following modifications in the conditions:

1. No restriction is placed on the size of the strainers, but they should be of reasonable size.
2. The plans, sections, and elevations to be drawn to 1-16th scale.
3. A section through the front buildings up to and including the rail-heads of the lines to be drawn to a scale of 8 ft. to an inch.
4. Plans of the upper floors and basement need not be drawn.

Municipal Buildings, Rangoon.

Intending competitors in the above competition are informed that the assessor is an Associate of the Royal Institute of British Architects and is Consulting Architect to the Government of Burma. The duties of the assessor will be in accordance with Clause 2 of the regulations of the R.I.B.A. for architectural competitions. The selected architect will have undivided responsibility for the carrying out of the work. The duties mentioned in Clauses 22, 24, and 25 of the Competition Conditions have been modified, and the duties of the selected architect will be those specified in the R.I.B.A. Schedule of Professional Charges. Clause No. 4 of the Conditions has been modified and payment of the commission will be in accordance with the R.I.B.A. Schedule. The plan numbered "6" in Clause 19 of the Conditions may be omitted by competitors

LIST OF COMPETITIONS OPEN.

SEPTEMBER 9. COUNCIL SCHOOL, CHORLEY.—The Education Committee of the Borough of Chorley invite designs for a Council school for about 500 children. Conditions (£2 2s. returnable) from John Mills, Town Clerk.

SEPTEMBER 30. SCHOOL, LLANELLY.—The Llanelly Education Committee invite designs for school buildings and domestic subjects centre at Stebonheath Terrace. Mr. G. E. Halliday, F.R.I.B.A., has been appointed assessor. Particulars from Mr. I. W. Watkins, clerk, Education Offices, Coleshill Terrace, Llanelly.

SEPTEMBER 30. NEW BUILDINGS, UNIVERSITY COLLEGE, DUBLIN.—The Governing Body of the University College, Dublin, invite architects to submit designs for new college buildings. Competition is limited to architects living and practising in Ireland. Mr. H. T. Hare, F.R.I.B.A., has been appointed the assessor. Applications, accompanied by a cheque for two guineas (returnable), to J. W. Bacon, M.A., Secretary and Bursar, 86, St. Stephen's Green, Dublin.

OCTOBER 14. PUBLIC SWIMMING BATH, BALHAM, S.W.—Wandsworth Borough Council invite designs for a swimming bath to be erected at Balham. Conditions, schedule of accommodation, and plan of site may be obtained from Mr. P. Dodd, M.Inst.C.E., 215, Balham High Road, S.W. on deposit of £1 1s. Designs to be sent to Mr D. A. Nicholl, Town Clerk, Council House, Wandsworth, S.W.

OCTOBER 29. EXTENSION OF MUNICIPAL BUILDINGS, GLASGOW.—The corporation invite preliminary sketch designs for an extension of their municipal buildings. From the sketches submitted, the authors of not more than five designs will be selected for a final competition, at an

honorarium of one hundred guineas each. Mr. John J. Burnet, LL.D., A.R.S.A., is assessor. Conditions (one guinea, returnable) from J. Lindsay, Town Clerk, City Chambers, Glasgow.

OCTOBER 31. TOWN PLANNING, HUDDERSFIELD.—The Housing and Town Planning Committee of Huddersfield Corporation offer premiums of 100, 50, and 25 guineas for laying out certain areas. Conditions (two guineas, returnable) from K. F. Campbell, M.Inst.C.E., Borough Engineer, 1, Peel Street, Huddersfield.

NOVEMBER 1. KING EDWARD MONUMENT, OTTAWA. Sketch models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

DECEMBER 1. ROYAL PALACE AND LAW COURTS, BULGARIA.—Architects desiring to take part in this competition should communicate with the Commercial Intelligence Branch of the Board of Trade, Basinghall Street, E.C.

DECEMBER 2. SCHOOL BUILDINGS, CARLISLE.—Particulars, City Surveyor, Carlisle.

FEBRUARY 1, 1913. MUNICIPAL BUILDINGS, RANGOON.—The committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars £1 (returnable) may be obtained from the London Agents, Messrs. Ogilvy, Gillanders, and Co., Sun Court, 67, Cornhill, E.C.

NEWS ITEMS.

New Bourse at Genoa.

On a site facing the Piazza Dafferrari at Genoa a new Bourse has been erected from designs by Signor Dario Carbone, of Rome, at a cost of £280,000.

School Ventilation.

The new schools at Fakenham are being supplied with Shorland's patent exhaust roof ventilators by Messrs. E. H. Shorland and Brother, Ltd., of Failsforth, Manchester.

Discoveries in a Surrey Church.

During the restoration of West Horsley Church, Surrey—a building in the Early English and Decorated styles—a staircase originally leading to a rood loft and a lancet window have been discovered.

A Business in Stained Glass and Mosaics.

The business in stained and leaded glass and mosaics which the late Mr. Thomas William Camm carried on for many years at the Studio, Smethwick, is being continued by his sons, Mr. Robert Camm and Mr. Walter H. Camm, with the assistance of Miss Florence Camm.

Newport Town Hall Extension.

A sub-committee of the Newport (Mon.) Parliamentary and Improvement Committee has been appointed to consider alternative schemes for an enlarged town hall, namely, an extension on the present site, or the acquisition of a new site upon which the whole of the municipal offices and law courts can be erected.

Roman Remains at Gravesend to be Excavated.

The country around Gravesend being considered to be rich in antiquities, a grant has been made by the Government to defray the cost of excavating one of the most promising parts of this old Roman site.

The work is to be undertaken under the supervision of the British Museum authorities, and it is expected that operations will commence at no very distant date.

Trades' Training Schools Report.

The Report of the judges on the work done during the session 1911-12 at the Trades' Training Schools has just been issued. The object of these schools, which are supported by the Worshipful Companies of Carpenters, Joiners, Painters, Stainers, Plaisterers, Tylers and Bricklayers, and Wheelwrights, is the improvement of craftsmanship, and the work of the past session maintains in all sections a high standard of excellence. The Report is published at 153, Great Titchfield Street, W.

LEGAL.

Offences against Building By-Laws.

Mr. J. W. Chapman was summoned recently for offences against the Doncaster borough building by-laws. The Town Clerk said there were two offences. The first was for building without submitting plans. Mr. Chapman was the owner of some old property at the corner of Pell's Close and Printing Office Street, and he decided to demolish the property and erect new buildings. On May 17th he submitted plans for the erection of two new dwelling houses with shops. The plans were disapproved, but were amended in accordance with suggestions, and were resubmitted and approved on June 11th. The building operations were commenced on July 11th without notice (as required by the by-laws) being given to the local authority—this being the second offence. A second notice was necessary when the foundations were put in, but that notice had not been sent. The Borough Surveyor (Mr. F. O. Kirby) discovered that the back part of the building was being cellared, whereas the plans did not show that they were to be cellared. The external walls were also not in accordance with the by-laws. The Borough Surveyor wrote to the architect on August 14th drawing attention to these facts. The architect replied that it was not the intention to build cellars when the plans were submitted, but when pulling down the property it was found that the old cellars went so far back as to make this necessary.

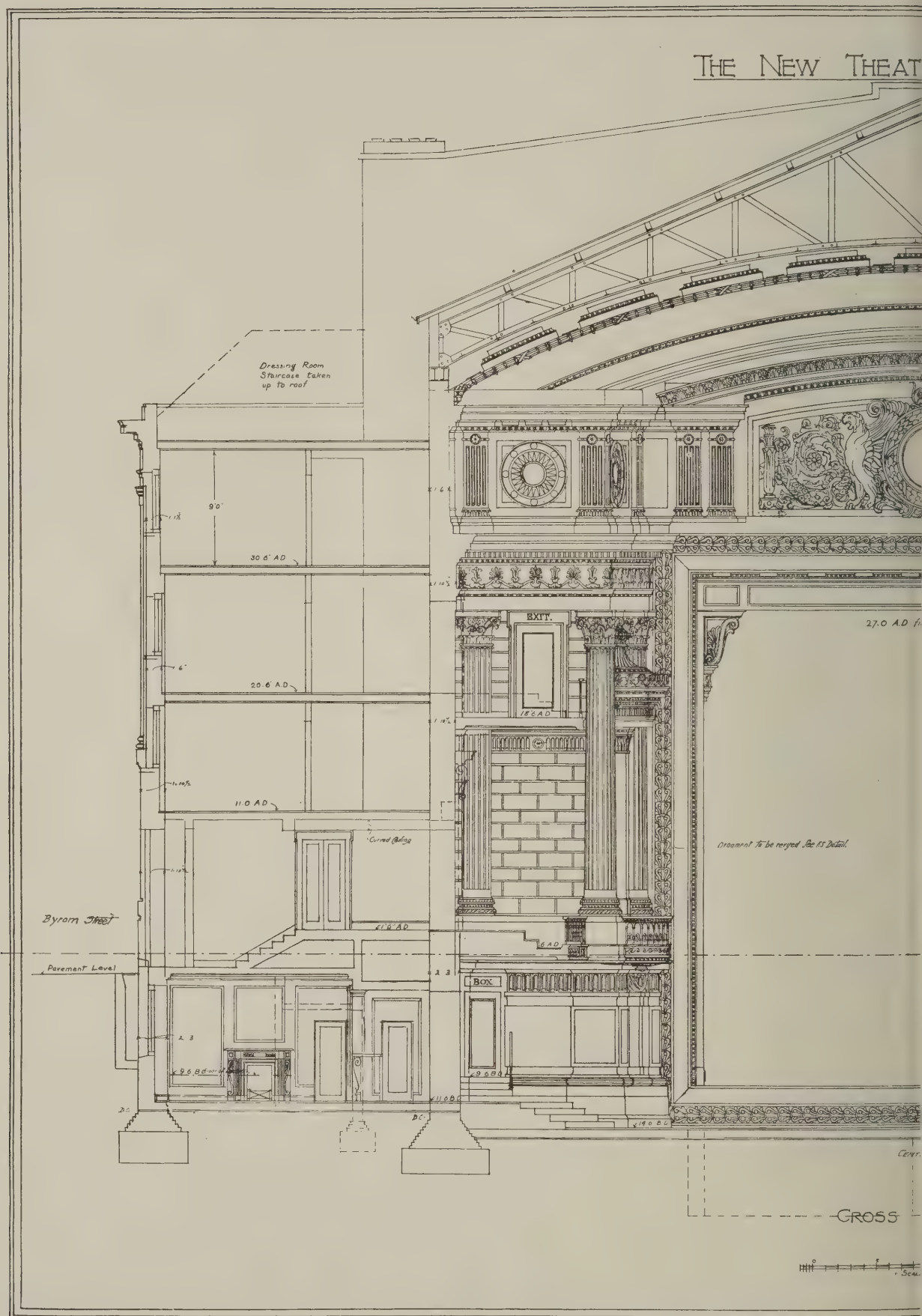
In defence Mr. Neal, for the defendant, said it was a trivial case and only a technical offence, for which he thought the Bench ought not to convict.

For not submitting the plans the defendant was fined 20s. and costs, and in the second case he was ordered to pay the costs, while for not giving notice of intention to build he was fined 5s. and costs in the first case and ordered to pay the costs in the second case.

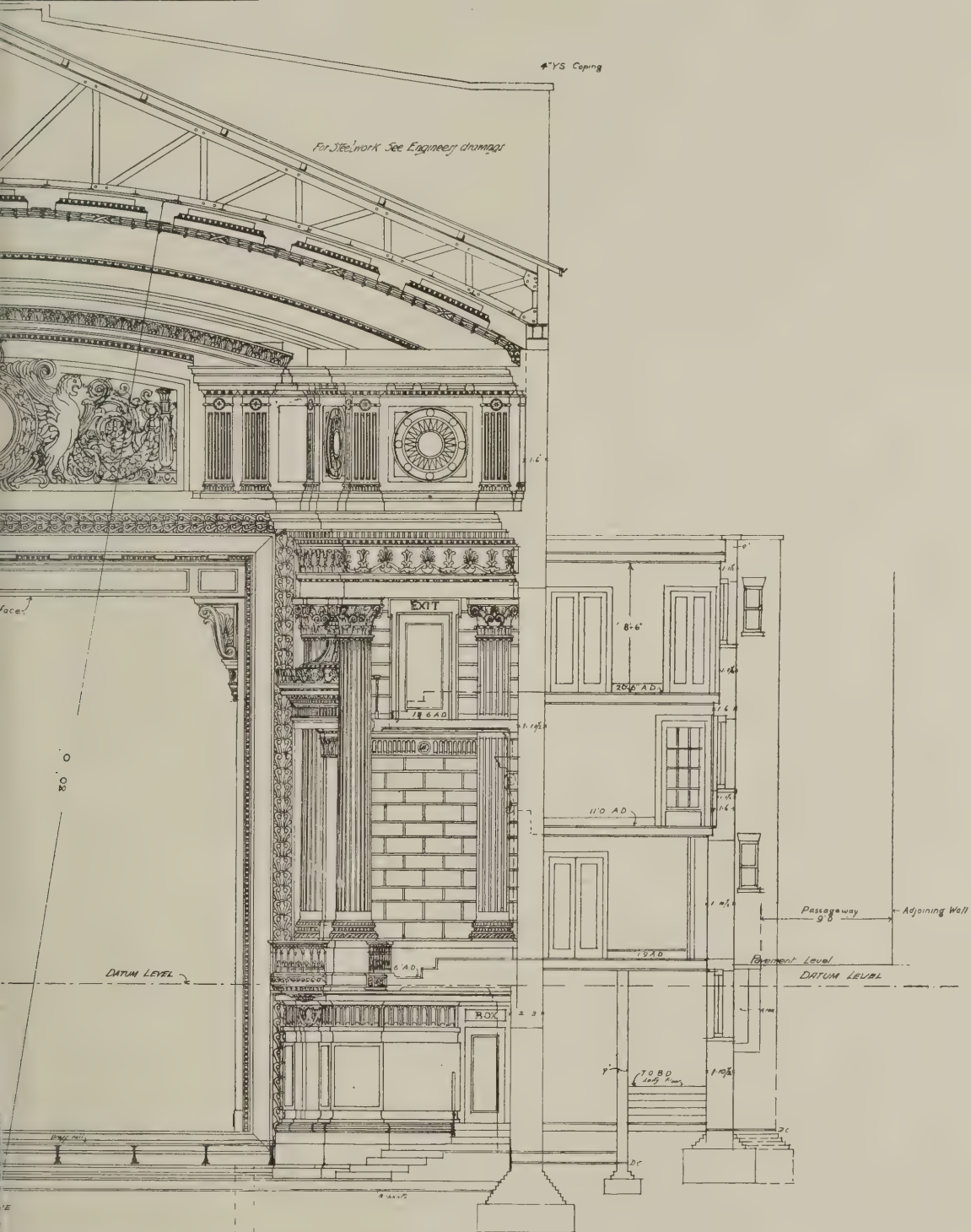
HIS MAJESTY'S THEATRE,
MANCHESTER.

The accompanying line illustration of this building shows the cross-section and the proscenium opening and boxes, while the photograph on page 240 gives a detail of the ornament in the tympanum. The latter measures 28 ft. by 10 ft., and is a very vigorous piece of work. Messrs. John Tanner and Son, of Liverpool and Westminster, were responsible for the modelling.

A detail drawing of the main façade of the theatre was published in the issue of this journal for May 29th last, and perspective views of the exterior and interior in the issue for December 27th, 1911.



MANCHESTER.



TION -BB

HORRIS FARQUHARSON } ASSOCIATED
RICHARDSON AND GILL } ARCHITECTS
46 GREAT RUSSEL STREET
LONDON W1C

INQUIRIES ANSWERED.

District Surveyor and the Quality of Bricks.

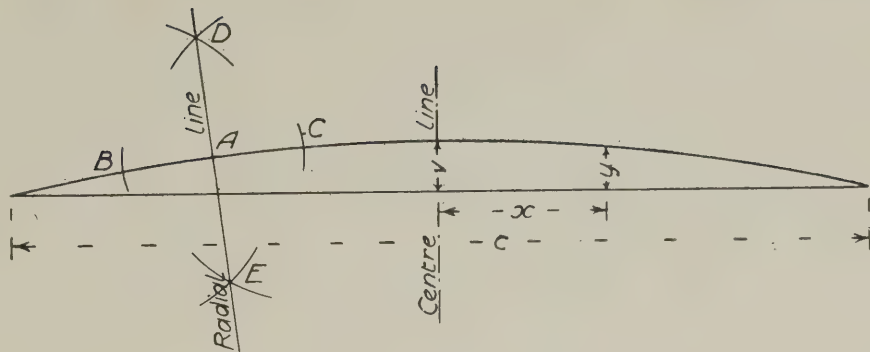
V. M. T. (London, S.W.) writes: "Is district surveyor entitled to stipulate as to what kind of bricks are to be used in building a wall? The point has arisen in the erection of a small greenhouse 12 ft. by 7 ft., with brickwork about 3 ft. high. The builder proposed to use ordinary place bricks, rendering the outside with cement. He is now threatened by the district surveyor with legal proceedings unless he uses 'good, sound, hard, well-burnt stocks.' I shall be glad to know whether he is entitled under any section of the Building Acts to enforce this."

This appears to be a very trivial matter. I should have thought that the district surveyor could employ his time to other advantage. Under the usual by-laws the local sanitary authority have ample powers to compel the use of "good bricks, stone, or other hard and incompatible materials, properly bonded and duly put together with good mortar."

F. S. I.

Drainage of Detached House.

Correspondent writes: "The accompanying sketch shows an existing drainage scheme, from which you will observe that the drains empty into a stream, a flap valve being fixed on the end pipe at the termination of the system. This pipe is some 9 in. above the water level. The discharge is not very efficient, pieces of paper occasionally find a passage down to this stream, and on this account and that of smell, complaints have been made by adjoining owners of land. The house is a large one, and sits in its own grounds, and there are other houses within a radius of, say, a quarter of a mile. A small septic tank has been suggested as a remedy, the effluent to discharge into this stream. If this is done, is it possible to get rid of all smell? Which would be the best point on the present drainage system to build it? The unpleasant smell might be reduced to some extent by removing the flap valve, which is probably quite unnecessary, and merely serves to collect decomposing matter on its inner face and to prevent the entrance of a current of fresh air, which would sweeten the drains. Or an improvement might be effected by adopting an opposite course and sinking the outlet of the pipe below the level of the water (after removing the flap), so that there is no possibility of escape of sewage polluted air from the outlet from the cesspool were it trapped, by fixing a bend on to the entrance of the pipe and dipping 12 in. or thereabouts below the level of the water, it would probably prevent the paper escaping from the tank. The present trouble is chiefly caused by the decomposition of the sewage in the cesspool. As a septic tank is specially devised to foster the decomposition of sewage, and the effluent from it is usually characterised by a strong, unpleasant smell, the construction of a septic tank will not remedy the nuisance, though it might reduce it, because its capacity would only be about one-tenth of that of the cesspool, and therefore the decomposition of sewage flowing through it



SETTING OUT ARCH OF 40-FT. SPAN.

would not be carried to such an advanced stage. After passing through the cesspool (or a septic tank constructed in its stead), the sewage should be directed to a filter constructed in about the position marked "Overflow chamber." The filter should consist of an open watertight tank about 6 ft. square, filled to a depth of 5 ft. with clean clinker broken to a gauge of $\frac{1}{4}$ in. and surmounted with a tipper or other arrangement for spreading the sewage evenly over the top surface. The bottom of the filter bed should be composed of coarser material and contain 2 in. agricultural pipes to pick up the effluent which drains through the filter and convey it to the outlet drain. It will be seen that this arrangement involves a drop of about 6 ft. between the pipes on the upper and lower side of the filter, although it could be arranged with less fall if necessary.

HENRY ADAMS.

Setting Out Arch of 40-ft. Span.

T. G. (Lancaster) writes: "We have to set out an arch of 40-ft span and our drawing table is only 15 ft. square. Kindly say how we should proceed." —The rise of the arch is not given, nor the material of which it is to be constructed. The whole arch may be drawn out to one quarter full size on the board, but it is assumed that it is required to draw it in full-sized portions. This can be done by drawing one-quarter of the arch at a time,

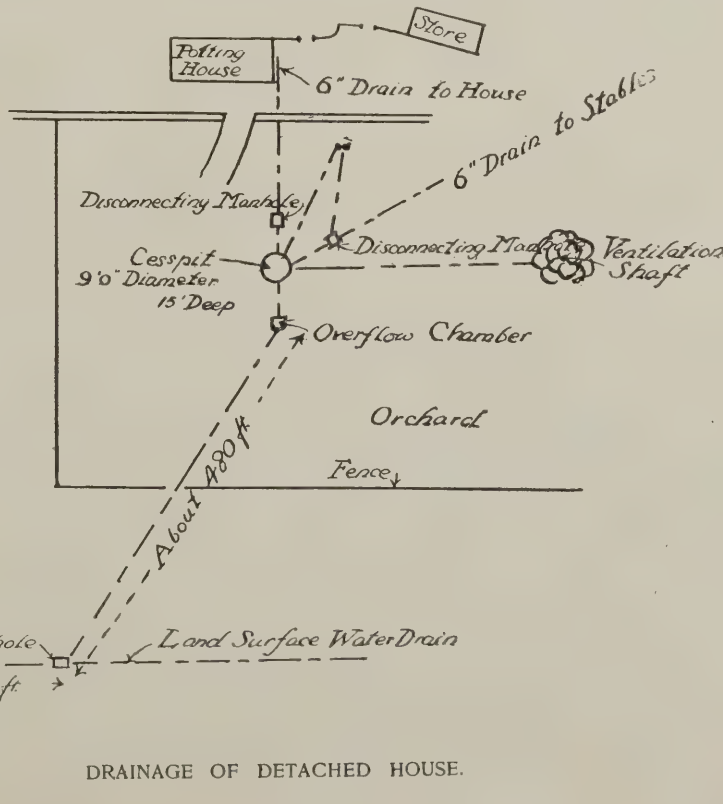
setting off the curve by ordinates from the chord, calculated as follows: Let v = versin, r = radius, c = chord, then $v = r - \sqrt{r^2 - \frac{c^2}{4}}$, and any ordinate y at distance x from centre of the chord = $\sqrt{r^2 - x^2} - (r - v)$. To draw a radial line, say from A, cut the curve with any radius from A, in B and C. Then with any radius from B draw an arc above and below the curve, and with the same radius from C cut these arcs in D and E. Join DE, which will be a radial line. The length of the chord can be scaled from the quarter full-size drawing.

HENRY ADAMS.

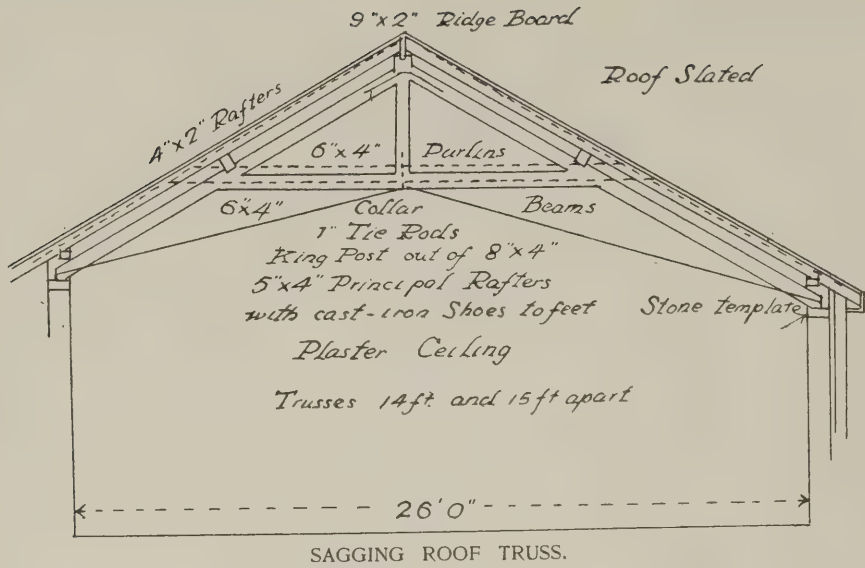
Cat-Head for Store.

Ex Parte writes: "Attached to a small storage building about to be erected it is proposed to have a projecting pulley—to be fixed over a double door opening in the first floor. It is proposed to limit the weight to be lifted to 5 cwt. The thickness of the wall to which the pulley is to be attached will be 9 in. unless a greater thickness is necessary. To take the stays sustaining the downward and inward thrust it is proposed to build a reinforced concrete lintel over the opening. What length would it be desirable to allow beyond the opening each way for building in? Kindly give any other information that may be useful."

—In the case submitted the gable wall is



DRAINAGE OF DETACHED HOUSE.



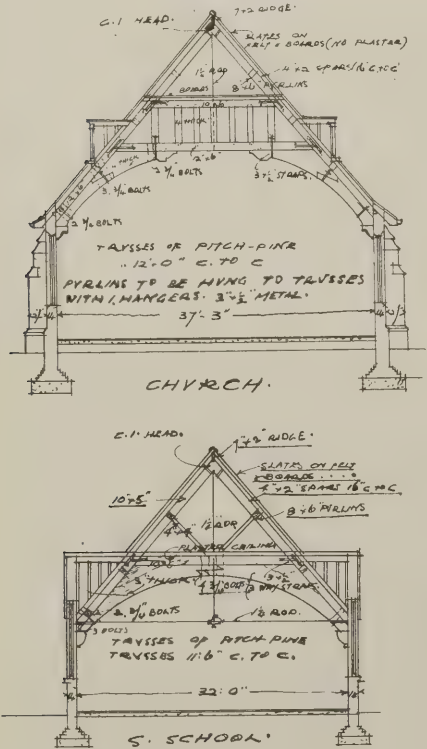
SAGGING ROOF TRUSS.

insufficient to provide for the tensile stress from the bracket unless tie rods are run backwards to the side walls or roof trusses. A rolled joist with 9-in. bearing at each end, faced with wood if desired, would be better than a reinforced concrete beam over the opening. Pulleys for lifting loads are often placed between a pair of rolled joists or channel bars run straight out from the nearest roof truss, and so producing only cantilever stress instead of pull and thrust, say two 4-in. by 1½-in. by 5 lb. rolled joists, or two 4-in. by 2-in. channels.

A. H.

Roof Trusses.

Architectus writes: "I enclose a sketch of proposed wood principals for a church and Sunday-school. Kindly say whether the construction is secure."
—The church trusses will be sufficient if wrought-iron bars, 3 in. by ½ in., are bolted up against the underside of the curved



braces. The school trusses will be sufficient as they are, but unless the roof is protected from high winds, by its position it would be well to add buttresses to the walls opposite the foot of each truss.

HENRY ADAMS.

Sagging Roof Trusses.

Sancho (Brighton) writes: "The timber roof shown by accompanying section has begun to sag, the places where movement is apparent being indicated by dotted lines. The trusses appear to give no sign of spreading. Kindly suggest a cause for this defect and also a means by which it may be remedied."
—The fault appears to be that the purlins are of insufficient scantling, as the collar beams between the trusses have quite enough to do to carry their own weight. The roof is altogether too light and the remedy would appear to be to put intermediate tie rods after strutting up the roof. The tie rods should be put at about every third pair of rafters.

HENRY ADAMS.

Sewer for Eight Cottages.

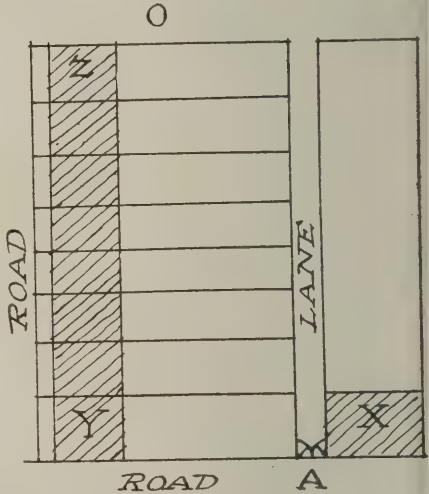
Omega writes: "Eight cottages are to be connected to the main sewer about 500 yards away. The fall obtainable is 1 in 140. Which of the following methods do you consider the more satisfactory: (1) 12 in. pipe drain from cottages to sewer with manholes every 100 yards apart; (2) 6 in. pipe from cottages to sewer with manholes every 100 yards apart, and with an automatic tank of the capacity of 150 gallons fixed at the head of drain, arranged to discharge three times daily?"
—A gradient of 1 in 140 is rather flat for a 6-in pipe sewer, but this size will prove much more satisfactory than would one 12 in. diameter. Unless water is plentiful and cheap it will be sufficient to carry out the proposed automatic flushing with 150 gallons of water twice instead of three times a day. All grit and heavy mineral matter, such as is washed off the roads, should, as far as possible, be prevented from entering the sewer, as it settles in the bottom and, besides being difficult to remove, reduces the velocity of flow through the pipes and collects solid sewage matter on its surface, causing offensive emanations. The channels through the several manholes should be carefully designed so that the velocity imparted to the flushing water by the syphon is not checked, and the connection at the main sewer should be at such a level that the sewage therein does not interfere with the discharge of the branch sewer.

X.

Right-of-Way Problem.

X. Y. Z. writes: "The lane shown in sketch is apparently a right of way for houses Z to Y and house O. (1) The gates

at A require repairing; the frame of one fixed to house X and the other hangs from a post let into the garden wall of house Y. Are the leaseholders of X and Y each responsible for the door hanging to a post fixed to their property? (2) Also, houses Z to Y and X are leased to various parties by the same freeholder. Can he require the removal of objectionable dustbins placed in the lane by tenants of house Z to Y?"
—(1) All the leaseholders and occupiers possess a right of way in common over the back lane shown in the sketch plan, but unless the onus is specially laid on some one or other of them, I fail to see any method (except by mutual agreement) by which the door is to be repaired. It apparently belongs no more to X or to Y than to the other houses. If the freeholder has merely given a right of way to each house it would appear that the back lane is still in his possession, and it is then quite possible

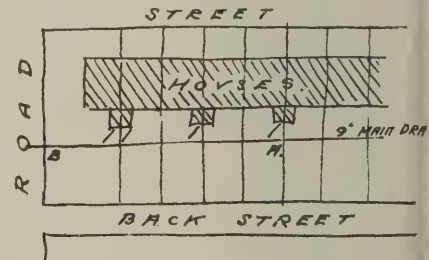


sible that the replacement of the door will fall upon him.
(2) Yes, if any dustbin is so placed or in such a condition that it constitutes a nuisance to a neighbour. No doubt there is a clause in each lease bearing upon this.

F. S. I.

Combined Drainage Difficulty.

Subscribers (Otley) write: "A row of houses, as sketch, drain into a main drain laid through the gardens, and each house belongs to a different owner. Would the main drain be considered a public sewer



repairable by the U.D.C.? If not, who would be responsible for finding out where it is blocked up between points A and B? —The decided cases dealing with the much-vexed question of "drain sewer?" have unfortunately been very diverse and conflicting; but, speaking broadly, it may be accepted as a fact that immediately a drain receives the sewage of more than one house (with the approval of the local sanitary authority), that drain becomes a sewer repairable by the sanitary authority. The fact that the pipes are laid in the public highway has no bearing upon the case.

F. S. I.

THE MODIFICATION OF BUILDING BY-LAWS.

BY HALSEY RICARDO, F.R.I.B.A.

The Model By-laws of the Local Government Board have long been a subject of much disapproval, and the views of Mr. Halsey Ricardo, expounded at the recent Congress of the Royal Sanitary Institute at York, will be welcomed as a valuable contribution to the controversy.

BY-LAWS, we all recognise, are made, not for the good primarily of the individual, but for the community. When a building is erected, the first requisite is that it should not be a danger nor a nuisance to its neighbours, and secondly, a danger or a nuisance to its occupants. By-laws are not enacted to check building, but to secure good building. It is a matter of common knowledge that they have failed to secure the latter. In the country, except for the matter of sewage disposal and the protection of the water supply, one might argue that no building by-laws are requisite. Each cottage, or group of cottages, should stand on an adequate area of land, and the owner should be responsible for their proper construction, and for any strictures that the medical officer of health may have to pass on them. The danger from fire is not a great one; the precautions under the by-laws are not really adequate, nor easy to enforce, for the occupant can, and does, stultify some of them habitually when furnishing his rooms.

The Model By-Laws.

The Public Health Act is to see that one is neither a danger nor a nuisance to the neighbours, and as long as this can be secured efficiently, the rest might be said to be the owner's business. However, the Local Government Board does not take this view, and has promulgated a series of Model By-laws for rural districts, which are in force throughout nearly half the country, laws which, when once adopted, the district councils are powerless to abrogate, and which the Local Government Board declines to modify to suit individual requirements. Moreover, the Board enforces on such local councils as may be desirous of having building by-laws a further embroidery of restrictions, specifications, and demands, till the original purpose of the Model By-laws is quite overlaid by the numberless provisions and safeguards, appropriate for the most part to urban requirements, or to districts that are in the process of becoming urban. And the local councils are eager to meet this demand from the Local Government Board, on the ground that it relieves them and their district surveyor from a great deal of responsibility; they have the comfort of knowing that these laws are in pretty general use, and that seems an evidence of their suitability; they adopt the plausible theory that a network of cast-iron regulations protects the individual from many petty injustices, and puts the community on an equal plane of health protection. This body to the conscience is illusive; the enforcing of regulations to their logical extremities, regardless of the local conditions and requirements, results in harshness and absurdities.

A Cause of Costly Building.

Meanwhile, under our present arrangement of local by-laws enforced by our county councils, a system has grown up of unnecessarily costly building; this, as a vested interest, the councils are naturally anxious to preserve. Under their own by-laws they have been penalised in their own

efforts; they have been made to conform, regardless of suitability, to their own regulations; they have subscribed painfully to a costly ideal of building, and they do not want the competition of a cheaper form of house. That anybody should be enabled to build, subject to sanitary safeguards, but without restriction as regards construction, would appear to them as an intolerable surrender of the restrictions under which they have worked and to which they have submitted. There is, as I have said, practically no appeal from the decisions of the county councils. Literally it might appear to be possible, but no individual, at any rate, would be prepared to devote the time and the money to carry up the appeal to the Local Government Board. But these councils are not agreed as to what they consider to be the principles of health and construction. They are required to define, for example, the minimum height of rooms, and for rooms on the ground floor there is a consensus of opinion that they should be at least 8 ft. high. But when you come to rooms in the roof, or partially in the roof, some councils require that the room shall nowhere be less than 5 ft. in height, and 8 ft. to the extent of half the superficial area of the floor, whilst others (such as Godalming) are content with 7 ft. in height from floor to ceiling to the extent of two-thirds the area of the floor, with a minimum of 4 ft. at the sides. On the other hand, Midhurst, for example (in the by-laws dated 1895), requires the ground floor rooms to be 8 ft. 6 in. high, the bedrooms 8 ft. 6 in., and the rooms partially or wholly in the roof to be 9 ft. for two-thirds the superficial area of the floor. Some councils seem to insist on the ground floors having boarded floors on joists, others permit what is generally the more satisfactory method of having a concrete floor to which the boards are nailed direct, although this is not contemplated by the Model By-laws.

Inflexible Generalities.

The Model By-laws require that "every person who shall erect a new domestic building shall construct in every habitable room" one or more windows, the sum of which shall be equal to one-tenth of the floor area, and that one-half at least "of such window" be made to open. This regulation appears to be accepted by all the various local councils who have adopted by-laws, without question, and also, I think, without due consideration. Adequate light is, of course, essential to every habitable room, but regard must be given to the source of light available for such purpose. The quality of light depends on the aspect of the window, its position in the house, and its position in the room. It is obvious that the quantity of light given by an attic window that has an unobstructed view commanding the south differs materially from that given by a window on the ground floor looking into a backyard to the north. Also the position of the window in the room matters greatly. A window that occurs immediately under the eaves of the roof and low down near the floor, cannot give the room as efficiently its quantum of light as a

window whose head is a few inches below the ceiling. No general statement or regulation can meet the case, and to fix a minimum of one-tenth the floor area is absurd. At most you can only say in general terms that ground floor rooms require larger window area than first floor rooms, since their outlook is generally more obstructed by foreground objects, and that not more window area should be provided than is requisite, since windows make the rooms hot in summer and cold in winter, any excess of which is prejudicial to their occupants.

Sanitation.

The Model By-laws decline to differentiate between an earth-closet and a privy. The local councils, as a rule, make the distinction. Some allow an earth-closet within the house; some forbid, and stipulate that it shall be at least 10 ft. away. Now, whilst this might in some cases be a valuable precaution to take in poor cottage property, it is an extremely arbitrary interference in the case of superior buildings, for there is no question that a properly managed earth system is more sanitary than a water-borne one. Again, wastes from baths and sinks are far better dealt with above ground than being made to travel through pipes to a cesspool, which is to be constructed according to the Model By-laws to be "impervious to liquid." In other words, you arrange a costly system of traps, pipes, and receptacle to enable you to keep your sewage until it is putrid, and then in that state have to bale it out on the ground; whereas, if it is to go there, it is better to put it there before it goes bad. The Model By-laws go on to say: "He shall also cause such cesspool to be arched or otherwise properly covered over, and to be provided with adequate means of ventilation." This, in my own experience, I find is interpreted to mean that a relief pipe must be provided from the escape of the gas generated in the cesspool. Such outlet is not, in my opinion, adequate ventilation, nor even ventilation at all. A stream of air should be passing continuously through the cesspool if it is to ventilate it, to be got by providing an inlet pipe as well as an outlet, or better still, to leave the top of the cesspool wide open, with wooden slats across the opening, to prevent accidents. But the truth is, we waste too much water in our present sewage arrangements, and where, especially, the amount of ground is limited, we ought to use the dry-earth system more.

About the providing of a pure water supply the Model By-laws are silent, except for ensuring that the supply, when on the site, shall be guarded against contamination from the house drainage. But it ought to be made compulsory that no house or cottage should be permitted to be built without proper provision for this essential.

By-Laws and Building Materials.

The Model By-laws are wise in insisting on dry walls, and leaving the builder in other respects unfettered as to size, material, position, strength, etc. But the county councils, in their local by-laws, have refined on this, and have gone into great particularity in their requirements and specifications on all those heads. Their regulations ignore, or boycott, local methods and tradition; they refuse to permit timber construction and, apparently, the erection of mud or clunch walls, and they rule that out of court as a roof covering. Now, timber construction, in some districts, is a very proper and convenient method of building a house; it can be made perfectly snug and weathertight;

it is sufficiently durable, and the danger to life from fire is not really a serious one, or really greater than the flimsy erections, permissible under the Model By-laws, of so-called incombustible materials. The same can be said of thatch. As a roof covering it is far superior to slates in respect of comfort, since it keeps the house warm in winter and cool in summer, and one's own experience is that it is rare for a thatched roof to be set on fire. The insurance companies have jumped to the conclusion, without sufficiently investigating the actual facts, that wooden erections and thatched roofs are more liable to be destroyed by fire than stone or timber buildings with slate or tile roofs. It may be so in towns, or where there is a congestion of houses or cottages, but it is not so in the ordinary village, or where the building stands isolated from its neighbour. This condition of things is ignored by the local by-laws, and one of the consequences is that the making of mud or chalk walls and the proper thatching of a roof is becoming a lost art, an art too good to lose. Even on the hayrick it is gradually disappearing, since ricks are being heaped under permanent structures with corrugated iron roofs.

Hollow Walls.

I suppose it is a vain thing to ask the county councils to discourage the use of hollow walls above ground. I consider them a faulty construction, leading to all sorts of subsequent disasters. Their sole excuse, that I know of, is that the outer skin, being separated by a cavity from the inner, protects the latter in case of severe stress of weather from the rain and damp. This is valid in theory, but the theory is largely stultified in general practice. The by-laws should insist on two damp-courses where hollow walls are being used, one at the bottom of the cavity, and one to the inner wall some three inches above this wide damp-course, otherwise the wet passing through the outer skin collects at the bottom and is sucked up by the inner skin. Not only ought there to be this second damp-course, but there should also be a cement or damp-proof rendering made, weathered to a sharp slope, so that the water that has penetrated into the cavity runs at once away from the inner wall and accumulates against the outer; without this precaution, the hollow system is no remedy against damp walls. But it is far better, and not much more expensive, to build the walls solid, and jacket them with a waterproof outer coat of cement stucco or rough cast. The evils of hollow walls are many. You have a space, if unventilated, full of damp air, in which the ends of your timbers are rotting away. Seeing that your floor joists rest probably on a wood plate (tared or sanded hoop iron meet this difficulty better) when this decays, the ends of the joists, also partially decayed, drop down some three inches or more on to the brickwork. If the space is ventilated, it becomes the sanctuary and playground for vermin. This open space, under any conditions, is a conductor of sound throughout the building. The system is bad in construction because the main weight of the roof and the floors comes on the inner wall, which in consequence settles down at a different ratio from the outer, almost unweighted, wall. If the ties are of iron (and even when galvanised they rust under their unfavourable conditions), they meet the strain by bending, and such water as lodges on them drains in consequence towards the inner wall; if the ties are made of stoneware or terra cotta, not being able to bend, they get fractured. I do not

know the reason, but there seems to be a general agreement that the cavity must not exceed $2\frac{1}{2}$ in. It would be just as easy to build the walls with a 5-in. cavity, and less chance of the effect of the void being neutralised by chance lumps of mortar resting on the ties and bridging over the cavity. Moreover, pipes, waste and others, have a way of going wrong as they pass from inner to outer walls, and the hollow space has been known to get filled with foul water and sewage, and as the warmer air of the rooms, and the open fires, act as a pump, the bulk of these effluents has thus been sucked into the inner wall.

What By-Laws Should Determine.

If the councils are going to insist on minutiae of construction, as they do when they specify the scantlings of roof timbers and floor joists, and their distance away from smoke flues, they should carry their insistence still further; they should require that the walls over the mantelpiece and at the sides of the chimney breasts should be 9 in. thick where the flues occur, that the external faces of the chimney stacks, where they emerge from the roof, should be at least 9 in. thick; that all skirtings should preferably be in cement, and where the question of cost may render this impracticable, the plaster must be carried down behind the wooden skirtings flush with their backs. In the usual building methods the space left affords a run for vermin, and in case of fire adds materially to its power of spreading, where plastered wood partitions occur. This open communication between two rooms, or passages and rooms, carries the fire from one part to the other, and feeds it with the necessary air supply. The councils' by-laws generally specify the scantlings of the roof rafters and floor joists, in several cases regardless of what the nature of the wood to be used may be! It would be better, if they must be so particular, to content themselves with specifying the sectional area; but why do so at all? As it is, by prescribing the minimum (which is really too little for inferior timber) the by-laws set a kind of standard, both in masonry and carpentry, so that any architect who exceeds the minimum is held by his client to have committed an extravagance. On the other hand, by insisting on footings to every wall, where concrete foundations are supplied, they create in many cases an expensive obstruction of no constructional value. If the concrete is thick enough, the walls may just as well rise from it their natural thickness, and it is often cheaper to build the walls in concrete below the ground level than in masonry or brickwork. The footings take up a lot of valuable floor space, and are a permanent nuisance. My conclusion then is that, though the Model By-laws issued by the Local Government Board for rural districts require amending in the article of window area, and bringing up to date in the matter of its provisions for the drainage and sanitation of buildings, they are in the main sufficient, and if they had been accepted by the county councils without any glossary, there would not have been this dissatisfaction and outcry. It is true it would have made the position of the district surveyor more responsible, but their relief from responsibility is not a wholesome element, and it leads in many cases to hardship and absurdities. And with all these doctrinaire prescriptions and restrictions, shoddy buildings are being erected all over the country, which, I believe, would be at most impossible if the surveyors had a freer hand in their examination of the plans submitted for proposed buildings.

ROYAL COMMISSION ON ANCIEN WELSH MONUMENTS.

The Royal Commission on Ancient Monuments in Wales and Monmouthshire (comprising Sir John Rhys, Sir E. Vincent Evans, Professor Sir Edward Anwyl, Professor R. C. Bosanquet, Robert Hughes, Esq., Rev. G. Hartwell Jones, Lieut.-Col. W. E. Llewellyn Morgan, Edward Owen, Esq.) has issued its third report. The Commissioners state that in the year covered by this report has been one of steady progress. The inventories of the monuments of Montgomeryshire were completed, and the volume containing them was issued as a Stationery Office publication. The inventories of Flintshire were completed by Mr. A. N. Palmer, one of the Commission's assistant inspecting officers, and the volume for that county being prepared for press. The inspection of the monuments of the county of Radnor by the secretary and Mr. G. Eyre Evans has been practically concluded, and the text of the inventories is in preparation. The printing of the Radnorshire volume will at once follow upon the publication of that for Flintshire.

With reference to other work of the Commission that is now in hand, it may be stated that the monuments of Denbighshire are in course of inspection by Mr. A. N. Palmer, and that the descriptions of many of them are already written. The county will be completed this year, and the publication of its inventories will, it is hoped, closely succeed the issue of the volume for Radnorshire.

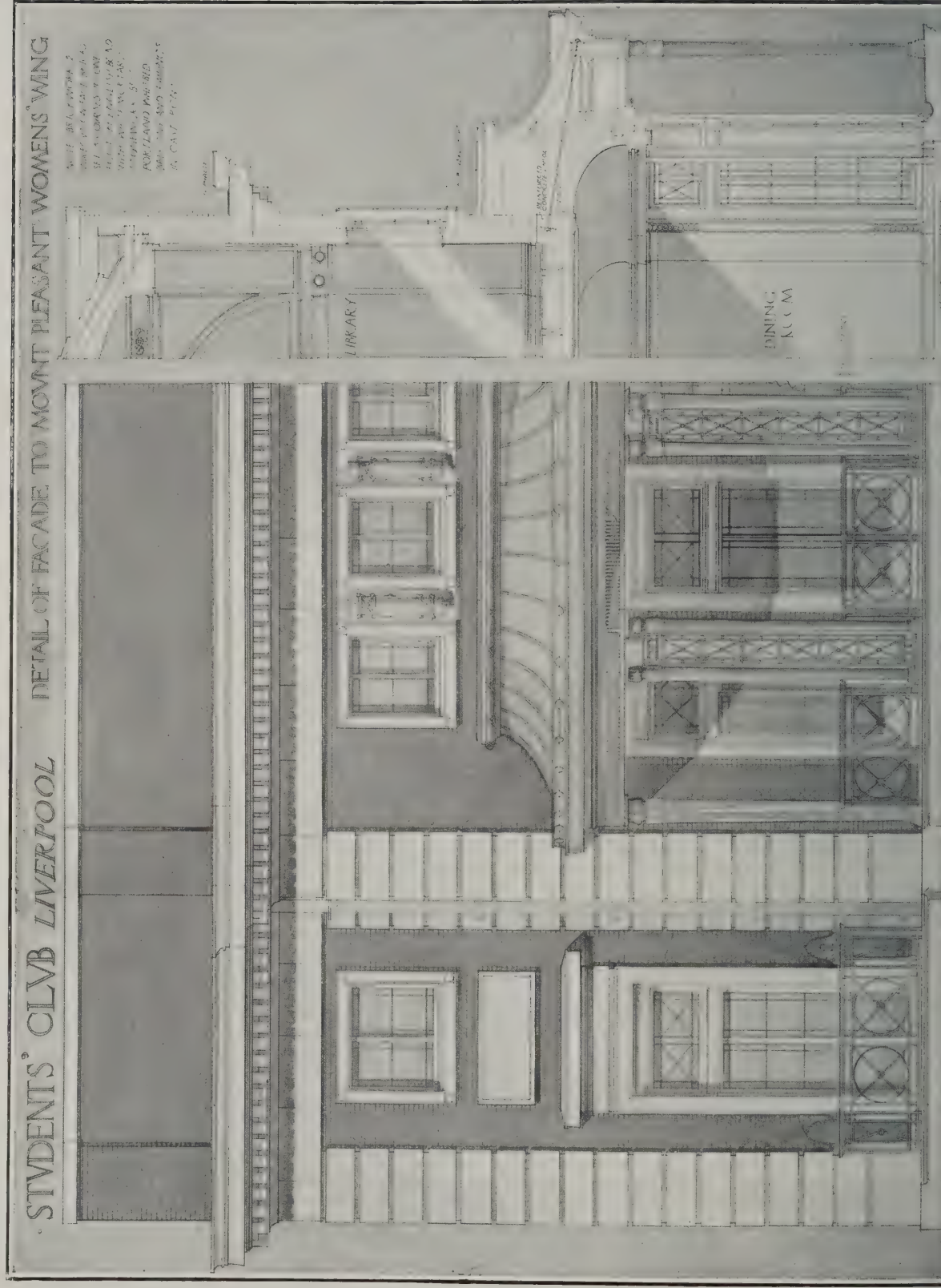
In the course of the year the Commissioners visited a number of the more important monuments in Montgomeryshire and Flintshire and believe that their visit have done much to revive the interest both of landowners and of local antiquaries in the monuments. In several important instances the result has been that measures were taken for the preservation of structures that were suffering from inattention and neglect.

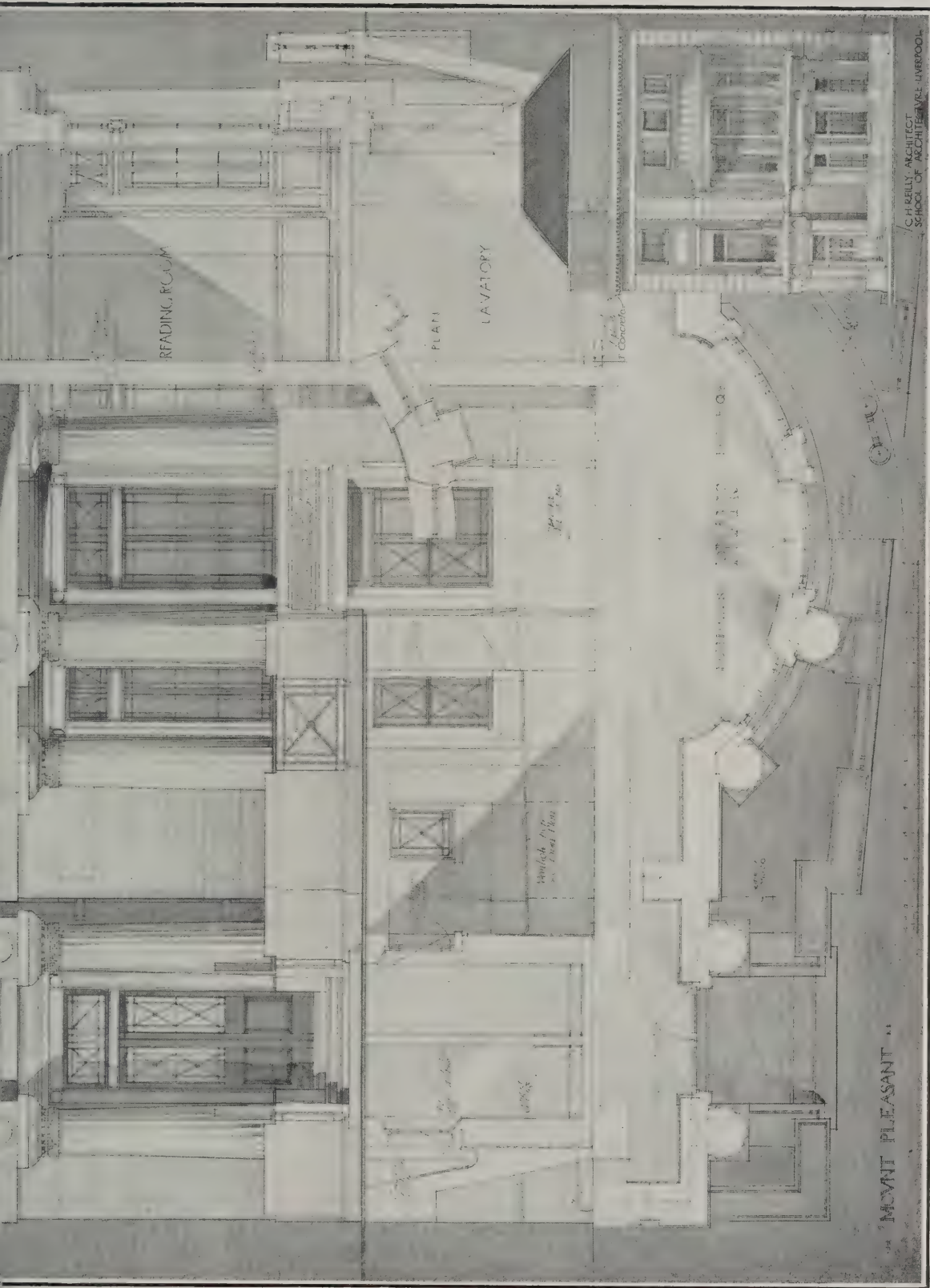
The Commissioners did not consider it necessary to call before them any Welsh archaeologists or other authorities upon the general question of the preservation of antiquities. But they repeat their invitation to anyone possessing "first-hand knowledge of the monuments of his district and desirous of laying before us carefully considered suggestions as to their preservation," to communicate with the secretary.

TRADE AND CRAFT.

The "Moralit" Closet-Seat.

A patent closet-seat known as the "Moralit" has recently been brought to our attention. This seat is made in one piece from a plastic material under 600,000 lb. pressure. Besides being jointless it is both acid proof and water proof. Being practically indestructible, it is altogether free from the nuisance of periodic overhaul and repair. A special arrangement is provided on the back of the seat by means of which it may be fitted to existing closets. The seat, which has the appearance of polished ebony, is fitted with nickel-plated hinges and the durable J.R. cushions in nickel-plated sockets. Prices and further particulars may be obtained from the sole agents Messrs. Aug. Brennecke and Co., 70, Finsbury Pavement, London, E.C.





PROFESSOR C. H. REILLY, M.A., ARCHITECT.

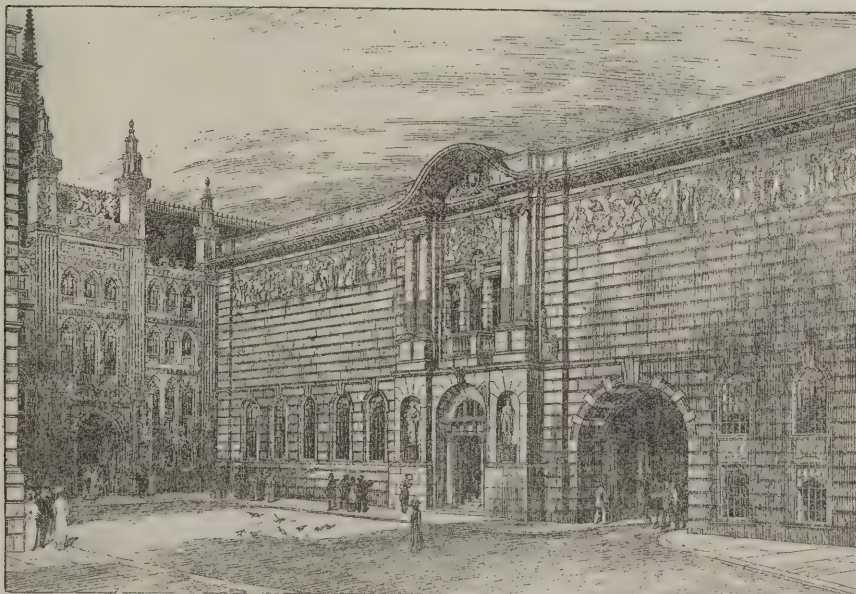
(Royal Academy Exhibition, 1912.)

THE ARCHITECTS' & BUILDERS' JOURNAL.

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Volume XXXVI.

No. 921.

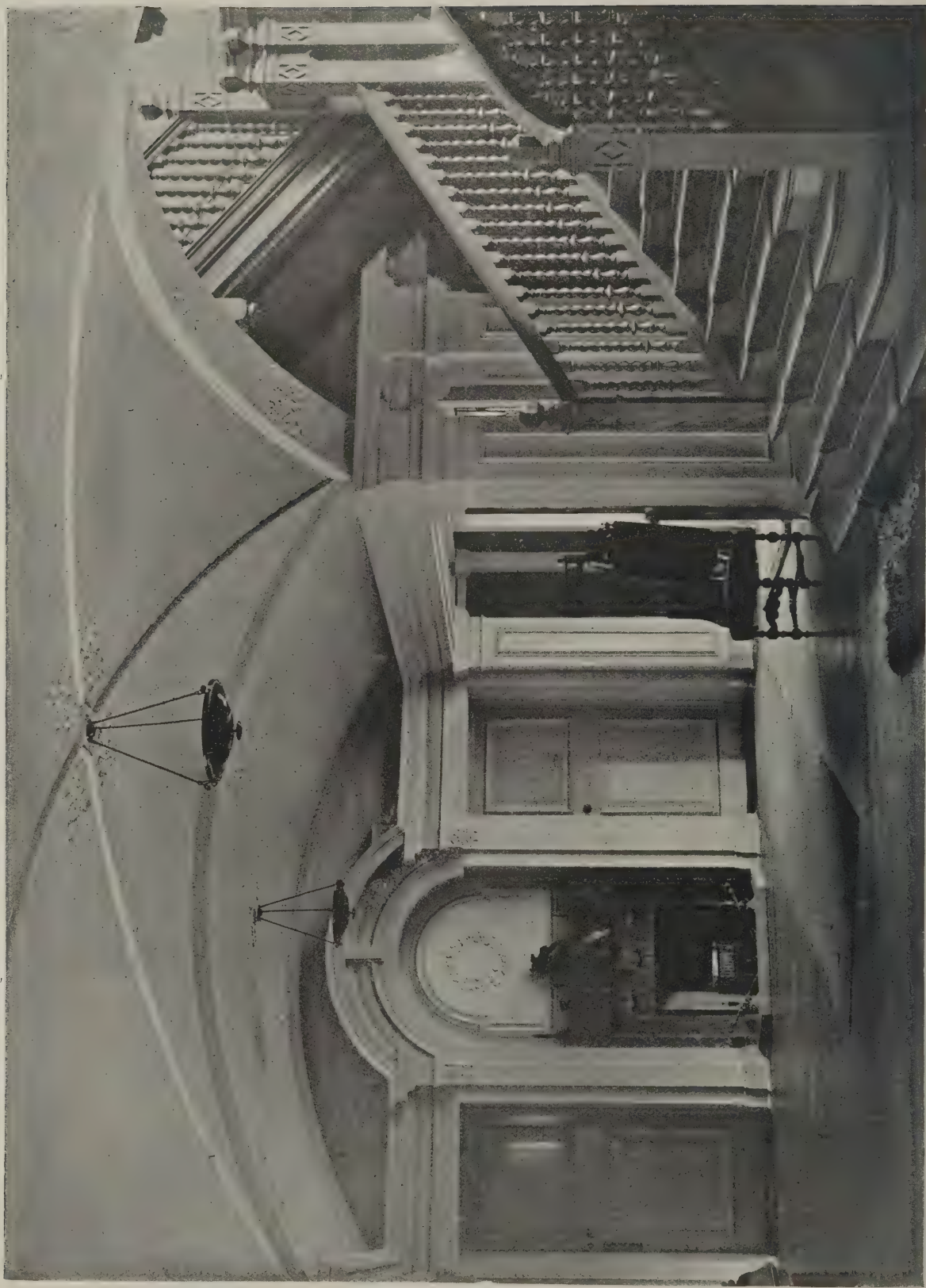


The City Lands Committee have submitted to the Corporation a scheme for general improvement in the precincts of the Guildhall; the chief feature being the building—the east block—shown on the right-hand side of the illustration. This will comprise, on the ground floor, two law courts, the Lord Mayor's Court offices, etc.; on the mezzanine floor a large committee-room and the offices of the Lord Mayor's Court staff; and on the first floor six art galleries, with hanging space of 725 ft. The second floor will be occupied by the offices of the Income Tax Commissioners, and the third, fourth, and fifth floors will contain offices not yet definitely assigned. The west side of the yard would be occupied by a new police-court and four floors of offices. The whole scheme involves an expenditure of £130,000; the work at the east side, as shown above, being estimated at £68,000.

PROPOSED REBUILDING AT THE GUILDHALL, LONDON: DESIGN FOR EAST BLOCK.

BY SYDNEY PERKS, F.R.I.B.A., F.S.A., CITY SURVEYOR.

(See also page 270.)



"EAST WEALD," HAMPSTEAD, LONDON: ENTRANCE HALL AND STAIRCASE.
H. V. ASHLEY AND WINTON NEWMAN, F.F.R.I.B.A., ARCHITECTS.

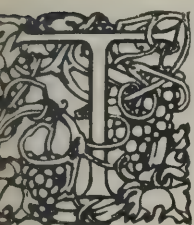
THE ARCHITECTS' & BUILDERS' JOURNAL.

SEPTEMBER 11th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 921.

Building in Rural Areas.



THE consideration of this subject has again been brought forward by the issue of a circular from the Local Government Board, addressed to all District Councils, calling upon them to reconsider their by-laws in respect to the circumstances under which building is carried on in their respective districts.

Some portions of this circular are applicable to the subject of by-laws in any district, whether urban or rural. The circular points out what, of course, is obvious to anyone who gives the subject a thought, that "new methods of construction and design will almost inevitably demand periodical revision of by-laws." This is the case more especially in reference to the materials and the thickness of walls. "The earlier forms of by-laws with respect to walls, which were framed with particular reference to brick construction, and imposed restrictive conditions as to thickness and the use of materials, are inappropriate to the types of construction now in use, such as building with hollow blocks or slabs of terra-cotta, concrete, and the like material, reinforced brickwork or reinforced concrete; and many of the older by-laws do not provide for hollow and half-timbered walls and steel or other framed walls hung with tiles, slates, etc., filled in where necessary with incombustible materials."

All this has a perfectly intelligible reference to materials which may be used in town buildings, except for the introduction of the reference to "half-timbered walls," which, in connection with the rest of the sentence, seems a little illogical. "Half-timbered walls" are not a new form of construction demanding revision of by-laws; they are a very old form, in use long before building by-laws were thought of, and they are a form of construction which in fact hardly exists now, for the so-called "half-timber work" introduced into modern buildings, on account of its supposed picturesqueness, is almost always a mere sham timber construction placed on the face of a brick wall for the sake of effect. It is, therefore, quite outside of the list of materials requiring revision of by-laws, among which it is cited; and in any case, whether a genuine timber structure or only a facing, it can have no place in by-laws relating to town building, as it could in no case be admitted into town structures. Building by-laws for towns are intended to provide not only for sound and sanitary construction, but for reducing to a minimum the risk of conflagration; and no structure mainly of timber could possibly be admitted there.

The real question is, whether provisions intended to minimise the risk from fire in towns, where houses are for the most built compactly and close together, may not safely be remitted in the case of houses and cottages in the country, which are built separately and do not adjoin other buildings. The question does not particularly concern country houses of the larger class, where economy in building is not of so much consequence, and mainly concerns the owner, who in most cases builds the house

for his own occupation. The crux of the question is in relation to cottages, which are usually built by the owner of an estate to provide homes for the agricultural labourer. Unless the labourers are to leave the land and seek employment elsewhere, more cottages must be provided; and the complaint of landowners is that existing by-laws render the erection of cottages unnecessarily costly, and make it impossible that they should be a paying form of property. Indirectly it might, even in that case, be the landlord's interest to provide them, for the land must be tilled, and the tillers of the soil must have homes to live in. But it does not seem reasonable that a cottage in the corner of a field or in the middle of a small garden should be subject to the same regulations which would rightly be enforced for a street building. And one result of the by-laws, as was pointed out by a landowner (Mr. Malcolmson) in a letter to a daily paper, is that the effort to build as cheaply as possible in accordance with by-laws leads to the erection of cottages of the ugliest description; "grave and irreparable injury has been done to many a rural district by the erection of unsightly dwellings, alike offensive to taste and an insult to nature; the cheapest and nastiest form of house which will comply with official regulations." We all know too well that form of cottage, the plainest and most uninteresting combination of brick walls and slated roof, or sometimes the still more unsightly corrugated iron roof, employed as the cheapest covering available. A cottage of this description is a kind of blot on a beautiful landscape, and Mr. Malcolmson goes on to say that if private enterprise were only free to employ timber and thatch, a pair of commodious and picturesque cottages could be built at a cost which would render it "a reasonably sound investment," and that official authorisation ought to be limited to a simple certificate of a local authority inspector that the cottages are healthy, wholesome (which seems the same thing), and fit for occupation.

If that means the abrogation of rural by-laws entirely, we should call that an unsafe proceeding; unsafe, possibly, for the landlord as well as for the tenant. By-laws are partly useful in an educational sense, as pointing out to the building owner what he ought to do; and it would be rather inconvenient to him if, after building a cottage according to his lights, the local authority inspector should decline to pass it as "wholesome and fit for occupation." It is, of course, difficult to frame by-laws, however widely worded, which will fit all cases equally; but the absence of any would probably prove the greater evil of the two. The case of the late Mr. Justice Grantham has been referred to as that of a landowner who wished to put up cottages for his tenants and was interfered with by the red-tape regulations of local authority; but he was the recipient of a good deal of misplaced sympathy from journalists and others who had taken up an unreasonable anti-by-law campaign. Some facsimiles of his sketch plans for cottages on his estate were published in an illustrated magazine at the time that the subject was being debated, and these were sufficient to show that he had not a notion how to plan the simplest cottage, nor how to express his plans in a drawing; and on the

evidence of these plans he was evidently a perfectly unfit person to be entrusted with irresponsible planning of cottages. There are probably other landowners of the same type, who would like to act as their own architects for cottages on their estate, and to ignore all constituted authorities on building; and it would be most unfair to the labourers that landowners of this type should be left to build labourers' cottages according to their own lights. All kinds of insanitary conditions would probably be the result.

By-laws there must be to keep rural cottage-building up to a proper and wholesome standard. But it would seem that those which are directed towards the reduction of fire risk in towns might be abrogated or modified for the country. The latest suggestion seems to be that landowners should be allowed to build timber houses with thatched roofs, as a means of combining economy with picturesque appearance. The thatched roof is an economy, and for rural districts we do not see any practical objection to it. In regard to the timber structure, its economy may be partly dependent on the question whether there is a supply of timber at or near the spot. If it has to be brought from a considerable distance its economical character might be a good deal eaten away by the cost of carriage. Then its interspaces have to be filled in with something; for this purpose, no doubt, brick might be used which would hardly be considered adequate for a self-supporting brick wall, especially if it were covered with rough-cast, which would have the advantage also of adding to its warmth. Half-timber building does not make a very warm house in winter. But cottages of this description might do very well, and would probably be pleasing in appearance, or ought to be so. They would certainly be much better than the boarded and papered-up cottages that have been in some quarters recently recommended. But it must be remembered that economy in regard to the use of any particular material is largely dependent on its distance from the site. In some parts of Cornwall it is cheapest to build with granite.

Among the points which special by-laws for rural districts would have to keep a hold on would be such things as the provision of damp-courses, a kind of detail which the philanthropic landowner, uncontrolled by legislation, would be very likely to overlook, and the provision of adequate window-space. In most old cottages, and in many modern ones, the windows are far too small for healthy conditions, though they may look well. And two subjects which ought to have the special care of rural authorities are scavenging and water-supply. Everyone who has been in the habit of reading the reports on the health of various districts, presented by special inspectors who have conducted enquiries on behalf of the Local Government Board, must have noticed how again and again the same two evils crop up in these reports—imperfect systems, or no system at all, for the removal of nuisance; and want of adequate water supply. Over and over again we come upon the same kind of memorandum in regard to country villages—"no water except from shallow wells, liable to contamination"; "no water to be had except by bringing it a quarter of a mile in buckets," and so on. This want of proper water supply in small villages, and in connection with isolated cottages or groups of cottages, is one of the most serious evils in the rural life of this country, and one which every rural district authority should give its attention to without delay. It is one of the most important questions in relation to rural housing.

Tall Buildings and the Public Health.

IN the Physiology Section of the British Association, the President, Mr. Leonard Hill, in his opening address on Thursday last, made some remarks which have a very practical bearing on modern city architecture. The health-giving conditions of life, he said, were temperature, light, and movement, and the alterations of

chemical composition in the air of crowded buildings were by no means so deleterious as the interference with light. But the public, satisfied with the maintenance of artificial ventilation of a specious standard of chemical purity, "had acquiesced in the elevation of skyscrapers and the sinking of cavernous places of business. Man had thus become cave-dwellers, confined for most of the waking and sleeping hours in windless places, artificially lit, monotonously warmed." The sun, the energiser of the world, "was cut off by the shadow of tall buildings." There is a great deal of valuable advice in the address, regard to the conditions of healthy existence, which is purely physiological and does not come within our sphere of discussion; but the reference to the ill-effects of the exclusion of sunlight by the crowding up of tall buildings is a repetition, by a scientific physiologist, of an objection which must have occurred even to those who are not scientific physiologists—that the carrying up of very high buildings without enlarging the width of the streets, is only substituting one form of overcrowding for another. A street which is wide enough, on hygienic grounds, for buildings of the old average height, is not wide enough when the buildings are nearly doubled in height. Money considerations are at the bottom of this; the desire to secure the greatest possible amount of rental out of a given area of building land has induced a kind of mania for high buildings, and the result, according to Mr. Hill's testimony, is that this increased rental is obtained at the cost of injury to the health of the community.

St. Vedast and the New Post Office Site.

MR. ARTHUR CROW, in a letter to the "Times" a few days ago, draws attention to the danger of building another church of Wren's, that of St. Vedast, Foster Lane, being sacrificed to the exigencies of new traffic routes. He assumes that when the increased northward traffic is brought through the east end of St. Paul's Churchyard by the opening of the proposed St. Paul's Bridge, it will be found desirable, if not necessary, to have a new road in a north-easterly direction giving a straight route to Liverpool Street Station from the east end of Newgate Street or the west end of Cheapside. At present there is a space to the south of the old Post Office buildings which would afford a sufficient entrance to such a road; but it is proposed that the new building to be erected partly on the site of the old Post Office building is to be extended southward to the line of the north side of Cheapside. In that case, says Mr. Crow, the new road would have to be started "further south" (we should have said "further east" would be a more correct way of expressing it), and would pass over the site of St. Vedast, which would have to be demolished. It seems to us, however, in any case, a most insufficient reason for destroying another church of Wren's, and one of those which, Miss Milman represents in her life of Wren, was specially designed by him with a tall thin spire to form a contrasting incident, architecturally, to the dome of St. Paul's. The practical advantage of a straight north-easterly route to Liverpool Street Station, especially under the present circumstances of traffic contemplated, is incontestable; but the present approach to the station from the neighbourhood of St. Paul's Churchyard is a very inconvenient round-about course. But even in this case it should surely be possible to form some kind of open place around St. Vedast, so that traffic could pass round one side of the church before entering on the straight road. But Mr. Crow goes on to suggest that a much better alignment of streets and buildings would be obtained if the rebuilt Post Office building were not carried further south; if, in fact, its south front were made in line with the south front of the main block of Post Office buildings fronting on Newgate Street. On grounds of architectural effect that is unquestionably an excellent suggestion; it would be the best way to render the whole collection of Post Office buildings, east and west of St. Martin's-le-Grand, a uniform and symmetrical group, the units having

architectural relation to each other. The question is, will the Post Office authorities consent, for the sake of the architectural effect and of the best entry to the proposed new north-east street, to give up the space required? They will probably reply with a *non possumus*; they will say that they must have the space, and they will not give it up except under compulsion. Ought they not to be compelled to accede? It is a most important point in the public architecture and the street line of that part of London, and ought to be fully considered before it is too late. We have no doubt the London Society have the right to present their views before them and will give it every consideration. There is a chance here of making a really important architectural improvement in the placing of a great group of buildings, and of forming an axial termination to the east end of Newgate Street: whereas, if the new block of Post Office buildings is continued southward, according to the present intention, all that will be seen at the end of Newgate Street will be one end of the new building jutting out across the line of vista; another instance of those non-axial alignments, or want of alignments, of which London is already full. And in any event, the demolition of St. Vedast ought not to be considered as a possible solution of the street problem at this point. It would be an act of mere vandalism.

A Blake Museum for London.

A PROPOSAL has been made that one of the houses in which William Blake once lived (two or three of which still exist in London) should be acquired and converted into a Blake Museum, containing relics of Blake and as many well-coloured copies as possible of his pictures, it being hoped that in process of time originals could also find their way to it, by bequest or purchase. The idea is a good one if it is carried out on reasonable terms, but it would not do to trust too much to the judgment of Blake enthusiasts. Blake was a wonderful genius, but not an entirely sane one, and the insane element in his ideas and his work seems to some extent to affect the minds of his worshippers. Many of his designs are wonderful in their imaginative and suggestive power; others can only be called fantastic, and are often very badly drawn, but the Blake enthusiast is ready to worship all alike. His short lyrical poems are exquisite; his longer books, "Jerusalem," "Milton," and the rest, have more of lunacy than literature in them. In his artistic designs he rose to the highest in the "Book of Urizen" series, in the illustrations to Blair's "Grave," and in some (not all) of those to Young's "Night Thoughts." But we hardly think that a general collection of all his works, artistic and literary, would be the best tribute to his memory; it would include too much that is better forgotten. A selection ought to be made, and one could hardly trust the Blake enthusiast to make it.

The Street Name-plate Problem.

MANCHESTER, it seems, has been for some time interested in the endeavour to solve the street name-plate problem. The Highways Department of the Corporation, it is said, have been for a long time at endeavouring "to hit upon something that would not only be uniform in design, but effective in the matter of lettering." Uniformity seems to be inevitable, and is, perhaps, on the whole, desirable as a matter of convenience and utility, although aesthetically this condition falls far short of ideality. It is necessary that the design should be uniform in order that it may be swiftly recognised, and also because no local authority can be expected to incur the expense of special designs for varying environments. At best, therefore, the design must be exceedingly null. It may not be invested with anything approaching to strength of character, for that might cause it to come into frequent conflict with its surroundings. The same prohibition applies to the lettering and the colouring as to the form and material of the plate. The whole thing must be neutral and therefore insipid.

How to make it conspicuous yet unobtrusive is really the only problem that calls for nicety of discrimination. In Manchester, nevertheless, the question of material appears to have given rise to a good deal of trouble. Slate was first tried and discarded; iron was found to be too heavy for the walls and hence dangerous to the public; aluminium, on the other hand, was dangerous because it was so thin and light that it was easily detached by a high wind; copper letters nailed on wood were too expensive; and, so far, malleable iron letters on a wooden ground are the last choice, but the Corporation are still seeking the ideal plate, and are understood to be keenly interested in the effort of the Royal Institute of British Architects to evolve a satisfactory solution. It is, as we have sought to show, a thankless task; and it seems to be very doubtful whether, in the upshot, any very striking improvement will be made on the suggestion of a plain cast-iron plate with raised letters in Old Roman type, for which plate the chief advantage claimed is that it can be easily repainted without engaging a sign-writer. This kind of name-plate is commonly in use in the London suburbs, the rim or border and the lettering being usually painted black, the groundwork white—or, rather, dirty drab—a singularly depressing object to encounter at a street corner, and a chilling adjunct to a house-front of decent design. If the cast-iron plate is to be inflicted on us, let it be at least redeemed from dirty drabness and funereal blackness. Brilliant paints there are in plenty, and from these should be selected a glossy or an egg-shell white for the lettering and border, with rich chocolate for the ground. It has been proved by experiment, we believe, that, for legibility, no more effective combination could be devised.

The Decadence of the Intercepting Trap.

THE old controversy as to the desirability or otherwise of inserting intercepting traps in house drains seems to have subsided simultaneously with the appointment, in 1908, of a Departmental Committee to enquire into the matter. That committee has just issued its report (of which a summary will be found in another part of the present issue), from which it is not very difficult to draw definite conclusions that seem to settle the vexed question at once and finally. The one thing that appears most clearly is a rather emphatic confirmation of an opinion which during the past few years has been steadily gaining support—namely, that the injurious effects of sewer air have been greatly exaggerated. The chief objection to it, after all, is its smell, which, however, besides being in itself a nuisance, may occasionally have the effect of worrying nervous people into a state of ill-health. The bacteriological evidence obtained in the course of the enquiry shows, in fact, that micro-organisms of sewage origin are very rarely present in sewer air, and that, on the other hand, they may be present in large numbers in drain air. It would therefore seem that the intercepting trap is apt to become dangerous from a perversion of its functions. It intercepts too much when it retards the outflow of the house-drainage, while its exclusion of sewer air appears to be a matter of relatively small importance. Sewer air, it would seem from recent investigations by Professors Delépine and Winslow (cited in the report) is immaculately innocent of disease germs as compared with the dust of the streets, which is now regarded as the chief vehicle of noxious microbes; many investigators having arrived at the conclusion that microbes found in sewer air are derived not from the sewage at all, but from the air outside the sewer! Professor Winslow found that the microbes collected from the fresh air were about three times as numerous as those collected from the sewer air! The sewer comes out of the investigation exceedingly well. It is even innocent, as a rule, of the sulphuretted hydrogen which some had supposed to be the cause of its characteristic odour. On the other hand, Dr. Haldane has found that sulphuretted hydrogen is given off in sufficient quantity to cause

symptoms of poisoning in animals exposed to it, from the traps of house drains in which sewage is apt to be retained, such as large grease traps. The real danger arises from the accumulation of decomposing filth; and it is the duty of the practical sanitarian to take every possible means of preventing this condition. In particular, renewed efforts should be made to redeem the intercepting trap from the charge that it is an agent in the pollution of house drains. In spite of the findings of the Departmental Committee, the intercepting trap is not likely to be abolished, the most telling argument in its favour being that no householder can bear to think that, at all hours of the day and night, the foul, if innocuous, breath of the common sewer has free access to his dwelling. He would rather run the greater risk of self-poisoning which the intercepting trap is supposed to imply. The moral seems to be that the public authorities having done their duty by the sewers, the private owner must be compelled to do the same by his drains, since these stand convicted of being a plain menace to social welfare. The public health appears to be more than ever a matter of setting one's own house in order; and there is not much reason to doubt that this object can be achieved without abolishing the intercepting trap, which, however, will be all the better for being regarded as an object of suspicion rather than of blind and dilatory faith. It will then become comparatively harmless; but its pretensions as a positive safeguard to health seem now to be utterly discredited.

Rebuilding Solomon's Temple.

A MOVEMENT is on foot for the rebuilding of Solomon's Temple at Jerusalem, this movement having the support of Freemasons in view of the fact that Solomon is taken as the founder and first Grand Master of the Order. The proposal, it appears, was put forward years ago, but at that time, under the Mahometan rule of Abdul Hamid, there was no hope of getting the necessary consent for the undertaking. With the advent of the Young Turks, however, it became possible to secure an option on the site where, it is supposed, Solomon's Temple stood. The chosen site is at present occupied by a Mahometan mosque called the Dome of the Rock, this name having been given to the mosque because it covers an enormous rock which the followers of the Prophet believe to be the centre of the earth. The belief that this rock was the original site of Solomon's Temple is based upon trustworthy traditions, for it was here that the second Temple was built when the Jews returned from their Babylonian exile during the reign of Cyrus the Great, only seventy years after the destruction of Jerusalem and the first Temple by the Assyrians.

Apparently the scheme at present is to form a company to carry out the rebuilding, but we should say that it will be many years before the new temple becomes an actuality. As regards the original building, Bible readers will remember that Solomon made a contract with Hiram, King of Tyre, to furnish the wood and stone that were required. Hiram gathered these materials in the Mountains of Lebanon, and brought them down to the coast, where they were placed on rafts for transhipment to the point nearest to the Temple. The site had to be levelled in Jerusalem, for that city has many hills. The Temple and its courts occupied an area of 370 by 240 cubits—about 455 ft. by 360 ft. According to the Bible, the architect of Solomon's Temple was Hiram Abu. Under him were 70,000 men who carried burdens, 80,000 hewers of stone, and 3,000 overseers. Three years were spent in preparing the materials for the building and seven more in the actual construction. The whole of the interior walls were lined with cedar, enriched with carving and gold platings, and the floor was laid with planks of fir. The amount of gold used in building the Temple may be gathered from the following verses from the Book of Kings: "So Solomon overlaid the house within with pure gold, and he made a partition by the chains of gold before

the oracle, and he overlaid it with gold. And the whole house he overlaid with gold until he had finished all the house; also the whole altar that was by the oracle he overlaid with gold. . . . And the floor of the house he overlaid with gold within and without."

Proposed Rebuilding at the Guildhall, London.

SOMEWHAT drastic alterations being contemplated in the region of the Guildhall, the Corporation has an excellent opportunity of showing a wise and liberal regard for architectural amenity. It is proposed to spend £130,000 on improvements, which include the erection of new law courts, art galleries, and offices. The announcement would be more welcome if we could be reassured on two specific points—namely, will the Corporation take the sensible course of instituting an open competition, with a properly appointed assessor to select the designs? and will they have the courage to ignore the rather chilling suggestion that "no money will be spent on the acquisition of property"? The scheme, so far as it at present goes, has been prepared by the City Surveyor, Mr. Sydney Perks, F.R.I.B.A., F.S.A., and it is said to have been "submitted to Sir Henry Tanner, C.B., the Chief Architect to H.M. Office of Works, who generally approved the scheme, making, however, some valuable suggestions which in part have been adopted." Both architects of unquestioned eminence, and the former, in all events, no doubt possesses an unrivalled knowledge of Corporation requirements. Nevertheless, as the City Lands Committee (which is submitting the report on the subject) acknowledges, the work is of national importance, and we would therefore urge the Corporation to throw the work open to national competition, and, above all, not to waste a great opportunity merely in mere obedience to the timid counsel that the cost of acquiring adjacent property "would be practically prohibitive." The Corporation of the City of London should be superior to mere parsimony.



Photo: A. M. Lush

THE CLOISTERS CHURCH, BONN, GERMANY.

A HOLIDAY COMPETITION.

DETAILS of churches in France, Germany, and Holland form the subjects of the four photographs which we have selected this week from the large number which continue to reach us. Two of the photographs reproduced are by Professor Charles Gourlay, of Glasgow, and two by Mr. A. M. Lusby, of Horsell, Woking. The following particulars relate to them:

Church of the Visitation, Le Mans.

The Church of the Visitation, Le Mans, is situated at the north-west corner of the Place de la République, which was formerly called the Place des Halles. It was originally erected as a chapel of the Convent of the Visitation, and the other conventual buildings now serve as Palais de Justice and prisons. The building was erected about 1730 by the Le Mans architect Mathurin Gallier, and has been restored by M. Darcy, who was responsible for the well-designed staircase which leads from the street level to the entrance. The front elevation is richly ornamented, but does not compose happily with the side facing the Place, which is plain and severe in



Photo: Charles Gourlay.

CHURCH OF THE VISITATION, LE MANS: CHOIR RAILING.

character, being quite in keeping with the external treatment of buildings in the Louis XV. style. The general plan is that of an aisleless oblong, divided into choir and nave, and having shallow transepts. There is a low dome over the crossing, which, however, does not appear externally, although its position is marked by a large lantern with ogee roof. The architectural treatment of the interior consists in the application of the Corinthian order, with complete entablature, as pilasters, all round the building, the effect being one of much dignity. The interior is richly ornamental, and the ornaments, with their application, are all distinctive of the Louis XV. period. The whole church is vaulted, and the vault, which starts above the cornice, is beautifully enriched with carving. The organ case above the entrance, the two-storey altar-piece in the choir, the choir rail of excellently worked wrought iron, and the wooden pulpit are all in the Louis XV. style—hence the harmonious effect of this fine interior.

Choir Screen, Haarlem Cathedral.

The photograph shows a portion of the screen that separates the choir from the aisle on either side of Haarlem Cathedral. The balusters are richly carved in oak, and they all differ, the main outline being square on plan. There is a good deal of excellent oakwork in the churches of Holland. Carved balusters very similar to these are found in the chancel screen of the large church at Monnickendam.



Photo: Charles Gourlay.

CHURCH OF THE VISITATION, LE MANS: VAULT OF DOME AND NORTH TRANSEPT.

The Cloisters Church, Bonn.

Both the monastic church and the cloisters are of the late Romanesque period. They are in an excellent state of preservation.

Particulars of Competition.

Photographs are desired of interesting buildings or details of buildings which are out of the ordinary class of illustrations. For such photographs as we reproduce we will pay on each a fee of 5s. or 10s. 6d. (according to the value we place on them). Prints should preferably be on glossy paper. It is optional whether they are mounted or not, but the name and address of the sender must appear on the back of each. The photographs must have been taken this year. There is no stipulation as to size, but as they are for reproduction, the larger the better. It is desired also that competitors should send with their prints a short description of the work shown.



Photo: A. M. Lusby.

DETAIL OF SCREEN IN HAARLEM CATHEDRAL.

THE ST. GEORGE'S HALL BLUNDER.

BY 53 votes to 40 on Wednesday last the Liverpool City Council accepted a tender of £2,357, subject to a loan being sanctioned by the Local Government Board, for removing a large portion of the podium wall at the south end of St. George's Hall, and for providing in the gap so made a long flight of steps divided by three shallow landings.

In this way the penultimate stage—for there is still a loophole for hope that the loan may not be allowed—of this long-drawn-out drama of municipal bigotry has been reached, and the mutilation of a unique building brought one step nearer reality. It is instructive to recall briefly the history of this question, which has been debated now for nearly two years.

After a meeting at the Town Hall, with Lord Derby in the chair, when a proposal to erect an equestrian statue to the late King—itself a doubtful proposition—was carried, the Memorial Committee at once commissioned Mr. Goscombe (now Sir Goscombe) John, who lost no time in visiting Liverpool to inspect the many possible sites. It should be noted that an initial mistake was here made in not appointing an architect to consider sites with the sculptor. As a result Sir Goscombe hit on what

Unfortunately, the obvious prettiness of Sir Goscombe John's idea when viewed by itself, without consideration of the great mass of the Hall behind the statue, must have appealed to Mr. Shaw's strong sense of the picturesque; for in the amended design which he soon afterwards issued he made only one small alteration, that of reversing a portion of the subsidiary staircases.

The publication of this second scheme, in spite of the prestige of Mr. Shaw's name, called forth an even greater protest than the first. Not only the Liverpool Architectural Society, which in a difficult position has throughout acted with a high sense of public duty, but the Council of the Institute petitioned Lord Derby, now the Lord Mayor, and the Memorial Committee to abandon the scheme. Faced with these difficulties, the committee again proceeded to do what to laymen must have seemed the obvious and fair thing, namely to take further advice. They consulted Sir Aston Webb, Professor Blomfield, Sir Hamo Thornycroft, and Mr. Belcher. The first two were against any alteration to the Hall, but the committee appear to have considered their opinion have been balanced by that of Mr. Belcher, who has the distinction of being the one architect of position to agree with the opinion of Mr. Shaw and that of the sculptor. To the unanimous opinion of the rest of the profession backed up as it was by that of M. Pascal in France and



ST. GEORGE'S HALL, LIVERPOOL: THE SOUTH PORTICO AND THE PODIUM WALL WHICH IS TO BE CUT UP BY STEPS.

no doubt to him as a sculptor seemed the happy idea of placing the statue in front of the great southern portico and breaking up the podium wall on which it stands with two insignificant flights of steps, and in this way he gained for his memorial, at the expense of the architectural lines of the hall, a sufficiently striking position. Directly the design was published, however, architects were at once able to see the consequences of the proposal, and in a little time even the public realised what an anti-climax to the main pediment such a position for the statue would create. So great was the outcry that the Memorial Committee were compelled to seek architectural advice, and not being cognisant of the various currents of architectural opinion, not unnaturally went to Mr. Norman Shaw. Putting aside for a moment this further mistake of calling in a man who, through a long and distinguished career, had made a name for himself in styles of architecture only remotely connected with the pure Classic of St. George's Hall, we may give the committee credit, at this stage, at any rate, of trying to do the right thing.

Mr. Carrère in America, and to the warnings of the architectural Press, they turned a deaf ear.

By an unfortunate and rather extraordinary turn of events, Lord Beaconsfield's name was dragged into the controversy, which thenceforward assumed something of the virulence of political party warfare, in which the Press, which otherwise would no doubt have lent the full weight of its influence in unanimous opposition to the scheme, took opposite sides, and one of them, it is said, refused to publish the communications of the Liverpool Architectural society.

Rather oddly, Mr. Shaw did not show any consistent conviction as to the direction his alterations should take. His first scheme was for two staircases and one statue, his last for one staircase and two statues; and whatever the final result may be, those who have opposed him throughout may take to themselves the consolation that they have at least prevented the earlier and almost Jacobean design from being carried out.

The plan as it stands, it will be remembered, is for a



ST. GEORGE'S HALL, LIVERPOOL: SKETCH BY ELMES FOR TREATMENT OF SOUTH FRONT.

(From a Pencil Drawing in the R.I.B.A. Library.)

NOTE.—It was never Elmes's intention to break the mass of the Podium wall with steps.

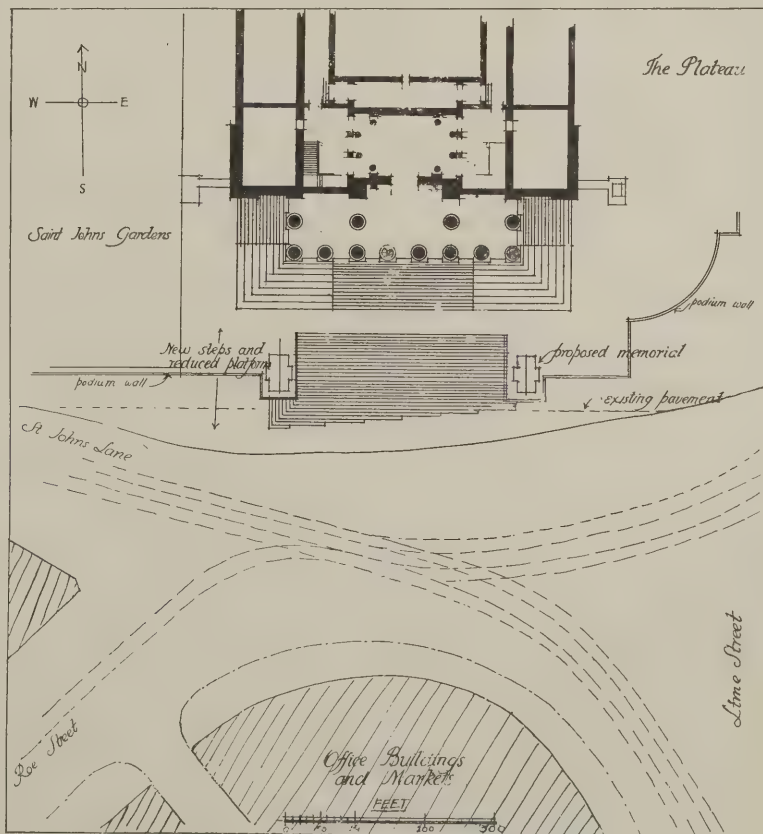
had flight of steps between pedestals for statuary, which flows out into the street some 29 ft. over the footway in the indeterminate manner of steps landing on a steeply sloping road. When the 29 ft. projection was objected to, the City Council in its wisdom immediately ordered to lessen the landings or steepen the slope of the over flights! Again, the direction of the steps does not seem to have been considered; externally they point towards the bull-nosed end of a block of warehouses; internally they lead to a small disused vestibule behind the judge's chair. But, worst of all, the steps break the isolation of the building, they over-emphasise a subsidiary axis, giving the building a slow and awkward connection with its sloping site, and they distort the shape of the plateau on which the building stands aloof from the traffic and the life of the town. The finest portico in Europe, which up on its inaccessible acropolis, made an irresistible appeal to the imagination; now it will only be a subsidiary entrance porch at the head of a straggling flight of stairs.

The whole controversy shows how little the majority in the Liverpool City Council appreciate the position St. George's Hall occupies among the great buildings of the world. A suggestion to alter the west front of St. Paul's Cathedral would only be a lesser folly, for the building is a less complete example of a lesser style of architecture. If we might hardly expect a high level of historical sense or taste from a provincial city council, even in a town of the importance of Liverpool, we doubt whether the matter would have been carried through had not Lord Derby, in spite of being Lord Mayor at the time, thrown himself into the fray with characteristic ardour and used his enormous influence to gain his end.

These steps, which have been built once in the past and once removed, may yet be built and removed again. On all sides there is evidence that a new school of Classical architects is arising, which will belong to the more exact methods and tradition of the great Classical masters of the early nineteenth century, whose work finds its climax in the epitome in St. George's Hall. Let us hope

that among these new men will come one with something of the strong personality and commanding authority of Mr. Shaw—one to whom, if he possesses the same courage, the work of removal of these steps will be a congenial task.

That, however, would certainly be a rather violently Gilbertian sequel to a series of incidents that already have exhibited too much of the absurdity of comic opera; but, at any rate, such a restoration would be in accordance with æsthetic justice.



PLAN OF THE KING EDWARD MEMORIAL SCHEME IN FRONT OF ST. GEORGE'S HALL.

A DEFENCE OF OFFICIAL
ARCHITECTS.

BY ERNEST J. DIXON, A.R.I.B.A.

The natural repugnance of the private practitioner for the official architect has always been acute, and is again fully, if not judicially, expressed by two recent communications to the professional Press—the article by Mr. Rae Douglas in *THE ARCHITECTS' AND BUILDERS' JOURNAL* for September 4 and a letter by Mr. H. Wigglesworth in the "Journal of the Royal Institute of British Architects." Certain aspects of the local politics of the question have been dealt with by Mr. Rae Douglas, whilst Mr. H. Wigglesworth contents himself by hinting at the expense and referring to the injustice to the private practitioner, who "contributes rates and taxes to the maintenance of a system which is gradually absorbing all State and civic architecture, and dependent officials, taking the place of independent artists working in friendly rivalry and healthy competition."

The public believe it to be cheaper to employ an official at a salary to supervise all the architectural and engineering work it requires than to pay the recognised fee on each contract to private practitioners. As to the artistic and constructional value of the results, the majority of councils and corporate bodies are insisting on the production of some professional diploma—often that of the Royal Institute—from candidates for appointments. It is difficult to see how anything further can be expected from the laymen who compose these bodies.

The belief in the saving effected by the employment of an official architect is extremely difficult to deny with any sense of justice to the entire facts of the case.

The salaries of experienced assistants with diplomas from professional bodies that many practitioners envy are ridiculously low in private practice, the excuse being given by the principal that he cannot afford to pay more. The London County Council employs more than 600 assistants, with a salary bill of £100,000. Practically all these assistants are members, licentiates, or students of the Royal Institute. The scale of salaries of councils and corporations generally is far superior to that prevailing in private practice. Are we to grumble, therefore, because a large section of our profession is better paid and housed than the remainder in private practice? Are we to be asked to agree to the argument that the employment of private practitioners is cheaper when that cheapness is secured by reduced salaries to assistants? Why should the profession as a whole exhibit exaggerated signs of annoyance because £464,493 is put in its pockets by the Office of Works and another £100,000 by the London County Council? We are greedy, perhaps, and want more. The "friendly rivalry and healthy competition of the independent artists" having given rise to, and sustained, the registration movement, we may safely conclude that it has not proved palatable to the profession to enjoy rivalry which becomes too keen or competition which is too acute.

In offering a theoretical agreement to the artistic aspect of the case as put by Mr. H. Wigglesworth, we may ask the question whether that agreement is practically justified. The small amount of really excellent work which is done to-day, the many harassing spectacles of eminent private practitioners in juxtaposition, to-

gether with the general condition of "flux" in design, "donnent furieusement à penser" to those who follow our profession, and much more therefore on the part of the layman who endeavours to comprehend the itinerary of our art.

The wall of the Brighton and South Coast Railway in Buckingham Palace Road, the front of the South-Eastern Station at Victoria, much of the work now being carried out at Waterloo Station, many of the fire stations, cottages, flats, etc., of the London County Council, and some of the recent buildings by the Office of Works, are well above the average level of taste, although subject to the disadvantages of officialdom.

It cannot be denied that the increase in strength and numbers of these architectural "batteries" is a serious menace to the private practitioner. Many "official" employees are able to reinforce their salaries by private work, involving unfair competition with those who are paying rent for the exhibition of a brass plate. The "official" architect, however, is not their only competitor. The continued tendency for unofficial architecture to be concentrated into fewer hands is very marked. "Mills" of this latter description, with low pay and poor accommodation for assistants, are not objected to. A precisely similar trend is visible in all professions and industries, and is evidently beyond the control of any of them.

Most of what may be termed the "political" grievances described by Mr. Rae Douglas may be summed up in the question whether the architect is able to manage his client, or whether the official architect dominates or is dominated by his employers.

After exhausting a page in declamatory depreciation, Mr. Rae Douglas concludes with sympathetic irony, and advice which he knows will not be entertained. This attitude to the "official" architect is unfortunately too common. Whilst some hundreds of our profession are engaged "officially" as assistants, we find no effort to entertain their case or to preserve the advantages they already possess on the part of the bodies which represent the profession as a whole in the eye of the public.

The constant tendency to aggrandise a sectional grievance to a position it does not deserve is a very deplorable one. Let us hope this tendency will not be visible in the forthcoming registration proposals, and that the hundreds of members of the promoting societies who are "officially" employed will see a position worthy of their strength allotted to them.

Whatever is wrong with official architecture should be remedied by greater attention of the examining bodies of the profession to their candidates for membership for, as I have stated previously, a diploma of some kind is almost invariably exacted for official appointments.

FIRE PREVENTION AT ST. PAUL'S.

In our issue for last week were given some details of the new system of pipes, etc., in St. Paul's Cathedral for fire-extinction purposes. We understand, however, that these form only a small part of the scheme now being carried out by the Cathedral authorities under the supervision of their architect, Mr. Mervyn E. Macartney. In addition to means of fire extinction by a complete series of water pipes, the purpose is to carry out a scheme of fire prevention. It includes the removal of a great deal of in-

flammable material from the building, especially from the dome, the crypt, the back of the choir-stalls, the towers, galleries, and staircases; the substitution of iron, steel, or teak for soft wood; the erection of fireproof partitions; the provision of emergency entrances for firemen; and the introduction of various other appliances and precautions of a similar character.

The whole work, which is based upon suggestions made by the London Fire Brigade after a careful survey of the building, is being executed at a cost of several thousand pounds; and, in bringing the scheme to a successful completion, it is understood that Canon Alexander, the treasurer, has received generous assistance from the Ecclesiastical Commissioners, the Corporation of London, the leading City Companies, and some of the chief business firms, especially in the neighbourhood of the Cathedral.

The work was begun soon after Easter, and it is hoped that the principal portions of it will be finished by the end of the present year.

VENTILATION AND WARMING OF
CHURCHES.*

BY J. OSBORNE SMITH, F.R.I.B.A.

There are many churches which, from a hygienic point of view, are so unsatisfactory as to impair very seriously their efficiency as places for public worship.

They are the resort of young and old, not only the strong and vigorous, but also the aged, weakly, and infirm, who ought not to be exposed to the devitalising effects of a once-breathed, polluted atmosphere, or to face the dangerous currents of chilly air which descend from large triangular roof spaces, from windows above the ground-floor arcades, and from lofty ground-floor windows.

Experience abundantly proves that neglect of warming and ventilation in churches endangers health.

The cathedrals and larger churches have ample cubic space, and by judicious warming and occasional opening of doors and windows, especially after services, the interior air in such buildings can be maintained reasonably pure. In smaller buildings containing less cubic space per person, which are usually crowded, the need for effective ventilation and ample warming becomes imperative.

Unhealthy Conditions.

The chief reasons which tend to make churches unhealthy are:

1. Large open timbered roof spaces, in which the air is chilled and draughts are produced. Inner vaulting in stone or wood below the outer covering, or a ceiling half-way up the slope of the roof reduces the chilling process considerably. As there are often no effective outlets for foul air in these roof spaces, it is impure air that descends to the breathing line to chill and poison.

2. Clerestory windows or lofty ground-floor windows also chill the air near them, which, thus becoming heavier, descends upon the heads and shoulders of the congregation below. The draughts from this cause, and from roofs, are often moderated by frequent use of the building and continuous warming. In too many churches service is conducted on Sundays only, and fires are not lighted until a few hours beforehand.

* Extracts from a paper read at the York Congress of the Royal Sanitary Institute.

No provision made for fresh, warmed air to enter near, or below, the breathing line; e.g., at back of radiators.

No openings to allow of cross-ventilation just above the breathing line as in windows of all modern, well-equipped schools, but rarely found in churches. The presence of these openings causes the air to be stagnant, disagreeable, impure, and dangerous to health.

Damp floors and walls, which are apt to cause chills and colds in persons sitting near them. These are chiefly to be found in ancient buildings.

Hot-water pipes in channels sunk in floor and covered by gratings. These channels, being usually in gangways, are receptacles for dust and dirt from boots, shoes, and the sweepings of the floor generally; when the floor is washed, dampness is added to the heated dust in the channel and upon the pipes. Thus conditions antagonistic to health are set up, to nothing of the added danger when convalescents occupy end seats near the channels.

Pits below the floor containing many jets for warming purposes.

Hot-air ducts, which are never, or hardly ever, cleaned out. It is not at all unusual to find ducts intended to convey warmed air neglected and dirty.

Boarded floors with open joints. It is always borne in mind that there may be a mile or two of joints filled with dust

in a church where boarded floors are used. Sometimes near each row of seats there are two or more holes in the flooring, about one inch in diameter, for ventilating the space under, which in course of time becomes a large dustbin only four or five feet below the breathing line.

Sometimes, as the author showed, from an unpleasant personal experience, human remains within a church may render it highly insanitary.

Healthy Conditions.

The requirements necessary to make the interior of churches healthy for use and occupation may be briefly stated thus:

1. Ample means of cross ventilation from openings in opposite sides of the building below or near the breathing line, in order to get rid of foul air at the very spot where it is generated. Cross ventilation is also desirable high up near the flat ceilings, or in the sloping roof spaces, the openings being arranged to check or divert downward currents.

2. The inlets for fresh air to be as short as possible, capable of being readily cleaned, well distributed, and allowing at least one foot super of clear opening to about ten people.

3. Adequate means for warming incoming air, so that it may be not only warm but also pure and fresh as possible at the breathing line during services. Warming and drying air is a source of comfort, especially in a damp climate, but the drying can be so easily overdone as to be inconvenient. High temperatures should be avoided and provision should be made for supplying additional vapour to the internal air when required.

4. Warmth just below open roofs, clerestories, and tall windows to prevent draughts.

5. Jointless solid floors, which can be readily kept clean.

6. Seats and fittings which do not obstruct the passage of light and air, or hinder the cleaning of floors.

7. Means for preventing the deposit and movement of dust.

In cold weather, warmth, genial, all-pervading warmth, is desirable inside churches during occupation; the cold, bracing, breezy air which is so enjoyable when one is moving about is not welcome inside where persons are sitting. Provision, therefore, must be made for:

1. Warming incoming air during the services as well as the inside air before occupation;

2. Preventing the inrush of cold wind currents from windows by fixing hopper lights to direct currents upwards, and from entrances by double doors opening outwards and closed by checksprings, and by placing radiators or stoves near the entrances;

3. Preventing down-draughts by fixing hot-water pipes in roof spaces and below clerestory and other windows;

4. Generous warming apparatus, well distributed, without excessive temperatures either in pipes or warm air flues.

Methods of Warming.

1. Large close stoves near inlets for fresh air are very useful.

2. Underground stoves, the heat ascending through grating at floor level, are effective, but the air is often too dry and polluted by dust.

3. Warm air apparatus, by which cold air is admitted either from the church or from outside to a furnace room or battery of large pipes, and discharged into the church through vertical or horizontal gratings. This is usually an efficient arrange-



Photo: Architects' and Builders' Journal.

VIEW OF ST. ANNE'S CHURCH LOOKING
DOWN CHURCH STREET.

ment, but the warmed air is liable to be contaminated by passing through flues and over pipes which are cleaned only at rare intervals.

4. Low-pressure hot-water apparatus with radiators having fresh air inlets. This is effective and generally satisfactory when inlets are accessible for cleaning, and radiators are in suitable positions.

5. Low-pressure hot water apparatus with pipes in channel. For reasons previously stated this is an insanitary method. It is also ineffective, as the heat given off is generally reduced by the non-conducting matter accumulating on the pipes.

6. Medium-pressure apparatus with small bore pipes next outer walls or in channels, in coils, or round skirting of raised wood floor on which are the seats. A useful and economical method for distributing warmth when pipes are kept above the floors.

By all these methods fresh air can be admitted to be warmed before entering the building, but in many cases this has not been done.

Hot-water radiators to which fresh air can be admitted by short, smooth, cleanable ducts above the floor, are cleanly and cheap; effective boilers are also quite reasonable in price. There is now, therefore, no good reason for placing pipes in underground cellars or channels, or for allowing the bracing air to be contaminated by passing through long dusty flues.

Hot-water pipes or radiators can readily be fixed above the floor and under upper windows and roofs.

ST. ANNE'S CHURCH TOWER, SOHO.

The tower of St. Anne's Church, War-dour Street, Soho, London, W., is mainly the work of Samuel Pepys Cockerell (1754—1827), a pupil of Sir Robert Taylor at the same time as Nash and



Photo: Architects' and Builders' Journal.

ST. ANNE'S CHURCH TOWER, SOHO.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

Lectures on Town Planning.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I desire to draw the attention of your readers to the fact that this association is prepared to send lecturers to any part of the country to deal with the great and increasingly important question of garden cities and town planning. The housing of the workers demands more and more attention as time goes on, and the inquiries which we receive from all parts of the world show how genuine is the desire that something shall be accomplished.

In order to focus these aspirations, lecturers competent to deal with all aspects of the case have been secured, and dates may be booked up. Lectures may be either singly or in series, and I shall be glad to hear from anybody interested with a view to making arrangements.

EWART G. CULPIN.

Garden Cities and Town Planning Association, 3, Gray's Inn Place, London, W.C.

A CRANE ACCIDENT.

One man was killed and six were injured last week through a crane overturning at Great St. Helen's, Bishopsgate, London, E.C. The accident occurred on the site of the old Synagogue, where excavations for the laying of the foundations of a new block of offices are being carried out. Two cranes, mounted on separate platforms at each end of the site, were being employed to raise the earth that has to be removed. One of them stood on a platform about 20 ft. from the ground, and a number of labourers were working in the hollow beneath. As the crane was being swung round by the engine driver, a man named Joseph Mills, the centre bar snapped off near the base, and the crane, weighing, with the engine, more than four tons, fell below. Mills went

down with the engine, which appears to have turned almost right over and had buried itself in the loose earth, but in some way or other he managed to jerk himself clear of the falling machinery and suffered only from shock and a few cuts and bruises. Several of the labourers working near the crane were struck by the falling mass, and one was so badly injured that he died in St. Bartholomew's Hospital shortly after his admission.

COMPETITIONS.

Rangoon Municipal Buildings.

Messrs. Ogilvy Gilianders and Co., agents, Rangoon Municipality, 67, Cornhill, E.C., have been advised by cable from the Rangoon Municipality that the time stated in Clause 14 in the particulars of this competition has been further extended to March 1st, 1913. The latest date for posting letters to reach Rangoon by that date will be by the Indian mail closing in London on Friday, February 7th, 1913.

The "All-Time" Damp-course.

Lee's "All Time" sheet lead and asphalt damp-course (supplied by Alexander G. Lee, of 14, John Street, Bedford Row, London, W.C.), has been specified and extensively used on the new Southmead Infirmary, near Bristol.

Alterations to a House by Inigo Jones.

Hill House, Dunfermline—supposed to have been built in 1621 from designs by Inigo Jones—is about to be altered and enlarged by its owner, the Earl of Elgin.

A Manchester Architect's Appointment.

At the rooms of the Manchester Society of Architects last week a presentation was made to Mr. A. E. Corbett, F.R.I.B.A. (of the firm of Messrs. Woodhouse, Corbett, and Dean), who is leaving Manchester to take up a Government appointment as an inspector of schools. The presentation, which consisted of a gold watch and a gold-mounted fountain pen, was made by Mr. John Brooke, F.R.I.B.A., the president of the society.

others. He was the father of Professor Cockerell, and had as one of his pupils Latrobe, the architect of the Capitol at Washington.

The upper portion of the steeple was rebuilt in its present form in 1803. The materials used are yellow-grey bricks, Portland stone, and lead. At the south-west corner of the tower are two mural tablets, one to the memory of Theodore, King of Sardinia, the other to Hazlitt, the essayist.

The chief features of the tower are, first, its excellent colour effect and general originality of treatment, and, secondly, the striking and quaint finish it gives to the vista from Cambridge Circus along Church Street—one of the few successfully terminated vistas in London.

The drawing reproduced as the Centre Plate in this issue is by Mr. W. J. Roberts, M.A., A.R.I.B.A., of Hampstead.

ST. GEORGE'S HALL "A BIG, GRIMY BOX!"

By this time we thought the grandeur of St. George's Hall, Liverpool, was accepted generally, but a correspondent of the "Liverpool Daily Post," writing under the pseudonym "Vox Ridentis," extends sympathy to the view "that this large building is ugly and unsuitable, and that, if its podium is to be spared, it should be because it is the only really useful part of the structure."

And this purblind person goes on to say: "That the hall is not the finest classical building in the Kingdom anybody may convince himself who will take the trouble to descend into the Canongate churchyard in Edinburgh and look upwards at the High School. Let me go further, and declare that in a city like Liverpool a mass of masonry like St. George's Hall is a grave example of bad taste. Take from your drawing-room an inlaid, polished, and expensively cushioned sofa, leave it in your garden for five years, and then invite your upholsterer to admire it. His emotions will be mixed—in part pity for a decent sofa in a bad place; in part contempt for the idiot who put it there. But you will fail to kindle his admiration even when you insist that the original drawings from which the cabinet-maker worked must have been very lovely. At Athens, where a kindly climate turns beautiful white marble a still more beautiful orange, or gaudily painted under the azure sky of Olympia, St. George's Hall might have been tolerable. In Liverpool, where smoke obliterates architectural details, and where bird cages and weather stains render its ornaments ridiculous, it is simply a big, grimy box. Its presence is as much an insult to our intelligence as would be the sofa in the garden."

"Not only is St. George's Hall the wrong building for its place, it is also the wrong building for its purpose. Its acoustic imperfections torture alike the citizen who must there discharge his duty as a jurymen, and him whom the vain hope of hearing music or speeches has enticed within."

"If, then, without reducing the real usefulness of the podium, it can be remodelled in such a way as to introduce a note of gaiety into this dirge in stone, by all means let it be remodelled."

In regard to this last piece of advice we would refer readers to pages 272 and 273 in this issue; while the reference to the High School at Edinburgh is illustrated by the accompanying photograph.



Photo: Architects' and Builders' Journal.

THE ROYAL HIGH SCHOOL, EDINBURGH. THOMAS HAMILTON, ARCHITECT.

INTERCEPTING TRAPS IN HOUSE DRAINS.

DEPARTMENTAL REPORT.

October, 1908, Mr. John Burns, President of the Local Government Board, appointed a committee to enquire and report with regard to the use of intercepting traps in house drains. The investigation originated with a proposal, by the Willesden Urban District Council, to adopt a series of building by-laws in which the requirement as to the provision of intercepting trap was to be omitted. The Local Government Board refused assent to this proposal, but promised that it should be made the subject of a general inquiry. The departmental committee subsequently appointed, which consisted of Mr. L. W. Darra Mair, D., Mr. A. A. G. Malet, M.Inst.C.E., and Mr. H. J. Pearson, A.R.I.B.A., has now presented its report, which has just been published by H.M. Stationery Office.

SOON after the commencement of this joint inquiry, it became evident that the consequence of conditions found in intercepting traps in Willesden, an extensive examination of such traps in other districts would be necessary. Accordingly, the assistance of a large number of local authorities of districts near London, where such building under modern conditions had taken place, was invoked. Twelve months elapsed before these local examinations were completed, and at this stage it was deemed necessary, in consequence of the growth of the investigation, to conduct the joint inquiry into an inquiry by a Departmental Committee. In this Committee Mr. Pearson took the place of Mr. Hook Kitchin.

It was contemplated that the committee would visit a number of towns and districts in England and Wales where conditions illustrative of the advantages and disadvantages of the intercepting trap might be found, but, after consideration, it appeared that it would be more satisfactory and less costly to examine representative localities in London, and subsequently to make local investigations and experiments. A circular letter was therefore issued to the local authorities of the metropolis and the large towns inviting statements from their expert officers in regard to the main points at issue. The committee communicated with various gentlemen of recognised experience in drainage questions; with certain others who had been engaged in special research and investigation in regard to sewer air and drain traps; and with the Royal Institute of British Architects, the Architectural Association, the Royal Sanitary Institute, and the Institution of Civil Engineers.

The responses to these communications were very numerous, and comprised many valuable contributions. From them the committee were enabled to select witnesses to give evidence before them.

Since hearing evidence, the committee have also studied a large number of valuable and interesting experiments, which have been conducted and carried out by Mr. Patten Barber, then the deputy-engineer to the Bristol Corporation (now engineer to the Corporation of Newcastle-on-Tyne), in connection with the effect on traps of sewer air and drain air under pressure; by Mr. Patten Barber, engineer to the Borough Council of Islington, in connection with the passage of sewage through various intercepting traps; and by Dr. W. Andrews, pathologist to St. Bartholomew's Hospital, in connection with the detection of sewage microbes from sewers and drains, under practical conditions. The mentioned experiments were carried out at East Grinstead with the assistance of Dr. Wallis, medical officer of health, and Mr. Woollam, surveyor, and at Willesden with the assistance of Dr. Butler,

medical officer of health, and Mr. Woods, chief sanitary inspector.

The controversy regarding the necessity and usefulness of the intercepting trap in house drains is one of very long standing, and has led to much conflict of opinion among sanitarians both in this country and abroad.

Those who favour the trap claim that, in order to prevent escape of sewer air into the dwelling and injury to the health of the occupants likely to be caused thereby, it is essential to interrupt the aerial connection between public sewer and private house drain, and that, if this involves disadvantages, they are largely matters of detail capable of remedy; also that, even if some of these disadvantages are irremediable, they must be endured in view of the supreme necessity of excluding sewer air from the drain. On the other hand, opponents of the trap, while agreeing that sewer air should not be allowed to escape into the dwelling, contend not only that the intercepting trap is not an effective or a necessary instrument for this purpose, but that, in addition, the disadvantages it brings in its train are serious.

In the first attempts to control the construction of house drains by by-laws in this country, it appears to have been accepted that house drains should be used for ventilating the sewer with which they were connected. But in 1877, when the Local Government Board issued one of their earliest series of model building by-laws, this principle was abandoned, and a clause was inserted requiring an intercepting trap to be placed between the sewer and house drain in order, expressly, to prevent the entry of sewer air into the house drain. The reason for this alteration arose from the belief, then almost universal among sanitarians, that sewer air was one of the most, if not the most direct and commonplace way of all, by which certain infectious diseases were disseminated.

Dr. Parsons, recently assistant medical officer of the Local Government Board, informed the committee that it has since been the practice of the Board, when proposed by-laws have come before them for sanction, to urge local authorities to retain the clause requiring the provision of an intercepting trap, and that until this inquiry commenced its omission had not been accepted by the Board, except in the case of short drains to which no indoor water-closet is attached. The question therefore is whether this practice of over thirty years ought to be continued or whether it may with safety be abandoned or modified. This obviously involves very careful consideration, not only of the available evidence bearing on the influence on health of emanations from sewers and drains, and of the bacteriology of sewer air and drain air, but also investigation of the

practical working of the intercepting trap and of the disadvantages alleged against it as compared with the advantages claimed for it.

Disadvantages of the Intercepting Trap.

The alleged disadvantages of the intercepting trap fall into four groups: (1) That it forms an obstacle to the passage of air from the sewer through the house drains and the ventilating shafts thereof to the external air, and that consequently the ventilation of sewers is rendered both difficult and costly. (2) That the trap involves separate ventilation of the house drains, and that this necessitates the provision of a fresh air-inlet to the drain, which, owing to the capricious nature of air currents, often acts as an outlet for foul air and becomes a nuisance. (3) That the intercepting trap complicates and enhances the cost of the construction of house drains, not only by reason of addition of the trap itself, but also from the necessity of providing the air-inlet to the drain, proper means of access to the trap, and in other ways. (4) Lastly, the trap is objected to on the ground that it forms a serious impediment to the passage of sewage from the house drain to the sewer, and that this frequently results in more or less complete blockage of the drain.

Advantages of the Intercepting Trap.

An incidental advantage claimed for the intercepting trap is that it prevents the passage of rats from the sewer into the house drain. Apart from the undesirability on general grounds of the presence of rats in and about houses, such an advantage might be of very great importance in connection with plague. It appears to be doubtful, however, whether this intercepting trap is a barrier to the rat, for rats have been observed to pass through it, both from the drain into the sewer, and from the sewer into the drain. The fundamental advantage claimed for the intercepting trap is that it prevents the passage of air from the sewer into the house drain, and thus that it prevents the entry of sewer air into the dwelling. In this connection two questions of importance arise: one, whether it is necessary to exclude the air of the sewer from the house drain; the other, whether, as a matter of fact, the intercepting trap does prevent the access of sewer air into the house drain.

The water seal of the intercepting trap, which forms the barrier to the passage of sewage air, varies in depth from one to three inches. Theoretically, such a seal is unable to withstand a pressure of more than 2 oz. per square inch; that is to say, when, from any cause, pressure in the sewer exceeds the resistance afforded by the seal, air should pass from the sewer into the house drain in spite of the existence of the trap. In practice, however, conditions appear to be very different from those just stated. Usually sewers have many designed outlets for air, but, even if these are absent, the sewers are not airtight, which is not surprising, having regard not only to the joints of the pipes or brickwork of the sewers themselves, but also to the manhole and inspection chambers and their covers, as well as numerous sewer connections. Indeed, it is difficult to construct even house drains in stoneware that are airtight. Conditions, therefore, which, theoretically, ought to compress air in sewers do not do so, or, at all events, do not necessarily involve pressure on, or the passage of air through, the intercepting trap.

An important result shown by the experiments was that when a trap is forced

by air pressure, the water seal, though reduced in depth, is not liable to be destroyed.

Sudden Increase of Pressure in Sewer.

When air pressure in the sewer is increased with great rapidity and suddenness, as, for instance, in severe rain storms, it might be supposed that pressure on the seals of intercepting traps, to the extent of forcing air through them, may be more likely to occur than when the air in the sewer is compressed gradually. There was no direct evidence, however, that this is the case, and it is not clear that it does happen so long as the opening of the sewer connection into the sewer is not submerged. On the whole, therefore, it would appear, according to the evidence presented to the committee, and according to their own experimental observations, that, under practical conditions, the intercepting trap usually answers its purpose as a barrier to the passage of air from the sewer into the house drain.

So far as escape of air from the drain itself is concerned, one witness, Mr. Gilbert Thomson, claimed that this solution is practicable if the house drain is constructed of iron pipes with lead joints. Indeed, so convinced is he of the impossibility of laying stoneware drains so as to remain airtight, that for some years past he has declined in his business to construct any but iron drains.

Summary and Conclusions.

The disadvantages involved by the use of the intercepting trap are substantial and of serious practical importance, and as the most important of the effects of these disadvantages are concealed from view, they may remain in existence quite unknown to the householder. On the other hand, the construction of house drainage may be simplified by the omission of the intercepting trap.

The disadvantages of the trap may, to some extent, be obviated. Thus, the objectionable features of the fresh air-inlet may be overcome, apparently without detriment, by omitting this contrivance altogether. The only "ventilation" which appears to be required on a house drain, apart from anti-syphonage pipes, is that which should be provided by an opening at the top of each soil pipe.

The tendency of the intercepting trap to retain a considerable proportion (averaging, according to the committee's experiments, from 42 to 79 per cent.) of the solid matters of the sewage passing through it at any given time, and thus to favour blocking of the trap as well as putrefaction of the sewage before it reaches the sewer, may be diminished, to a great extent, by using a trap of smaller diameter than is customary at present.

The liability of the trap to become blocked appears, however, to be insuperable, and it is this liability which constitutes its most serious disadvantage. The accumulation of sewage in the drain produced by the block, and from which many undesirable consequences may follow, is not usually evident with ordinary use of the drain, and therefore may long remain undiscovered. This unsuspected blocking of the trap and accumulation of sewage appears to be very common, evidence of it having been found in more than 23 per cent. of 5,600 traps which were specially examined.

Although the liability to blocking is inherent in any intercepting trap, its evil effects can be minimised by constructing the house drain, or at least the lower part

of it, of iron pipes, and by closing with a removable cover the usual open channels in the inspection chamber which is provided as means of access to the trap. The object of these measures is to ensure that the effects of a block at the intercepting trap may become evident as soon as possible, and may admit of easy remedy without nuisance arising; and also to reduce to a minimum the chance of leakage from that part of the house drain which must be filled with sewage before a block at the intercepting trap can be discovered with ordinary use of the drain.

On the other hand, it seems to be established that the trap does serve as an effectual barrier to the entry of sewer air into the house drain, which is the fundamental advantage claimed for it. It is not liable to be forced and rendered useless, as has been supposed to be the case, by pressure of air from the sewer. This, it would appear, is chiefly because sewers are not airtight, under practical conditions, and therefore air in a sewer finds easier outlets than the water seal of the trap. The pressure which is liable to force the intercepting trap is limited to that which arises in the sewer connection after its opening into the sewer has been submerged, that is to say, after the aerial continuity of sewer and sewer connection has been destroyed. Likewise, the volume of air which can be forced through the trap is limited to that contained in the sewer connection.

Furthermore, when an intercepting trap has been forced in this way, the water seal is not destroyed. When the pressure is relieved, the trap will remain sealed, though, it may be, to a less depth than formerly, and, therefore, air is not liable to pass continuously through a trap, once it has been forced.

In the absence of the intercepting trap, the traps on even an unventilated house drain are, similarly, not liable to be forced by pressure from the sewer; and they are not liable to be forced, even after the sewer connection has been submerged, provided the house drain is furnished with a proper ventilating shaft.

If, owing to exceptional circumstances, such as the absence or the blocking of the ventilating shaft of the house drain, pressure is exerted against the traps on the drain, only one trap is liable to be forced, namely, that which has the weakest water seal. Air from a drain is not liable, therefore, to pass into a dwelling through a trap, unless it so happens that the weakest trap of all the traps on the drain belongs to one of the sanitary fittings inside the house. It needs to be borne in mind that the water seal of an efficient trap which has been forced is not destroyed. At the same time provision should be made against the tendency of ventilating shafts to become blocked by rust.

The main sources from which air from the sewer may gain entry into a house, in the absence of an intercepting trap, are defects in the drain and the open top of the soil pipe of ventilating shaft; such entry being in either case merely passive, or actively induced by aspiration, in consequence of differences of temperature.

The entry of sewer air into the dwelling through defects in the drain may be practically excluded if the house drain is constructed of iron pipes. An iron drain can be made absolutely airtight without serious difficulty, and usually remains airtight, contrary to what is feasible in the case of stoneware drains. It is probable, therefore, that the entry of sewer or drain air into a house can be limited in practice to

what may come from the ventilating shaft outside.

Assuming that, in a given case, air from a drain, or from a ventilating shaft, can enter a house, the essential question is whether there is any difference, so far as the inhabitants are concerned, between the entry of sewer air plus drain air and the entry of drain air alone. For if, in the absence of an intercepting trap, sewer air together with drain air can escape from a given drain or a ventilating shaft into a dwelling, it is equally possible, assuming the presence of an intercepting trap, that drain air alone will escape into the dwelling.

The committee have collected and carefully considered the chemical evidence, the bacteriological evidence, the results of recent and exact experiments on animals, as well as the general and epidemiological evidence, in their bearing upon the existence of definite risk to health as a consequence of the access of sewer air into the house drain in the absence of the intercepting trap. It is difficult to summarise this evidence. Briefly, however, it may be said that the chemical evidence shows that the most frequent characteristic of sewer air is the presence of smell. This smell is due to the presence of certain volatile substances, given off from sewage, in such minute quantities as to be harmless in themselves, apart from smell, or, possibly, to effluvia from moulds which may be attached to the walls of sewers. It is established that the smell of sewer air is only very exceptionally due to sulphuretted hydrogen, contrary to what has been supposed, and that this dangerous gas is usually, not present, even in minute traces, in the air of sewers.

The bacteriological evidence shows that micro-organisms of sewage origin are very rarely present in sewer air. On the other hand, they may be present in drain air in large numbers. This difference is the result of the splashing of sewage which occurs in drains, and which does not usually occur in sewers. The effect of any given splashing in a drain is of extremely short duration, the bacteria subsiding with great rapidity, but air currents, produced by ventilation, may, meanwhile, have conveyed these bacteria for considerable distances along the drain or into ventilating shafts of the drain. On the other hand, owing to the rarity of bacteria of sewage origin in sewer air, which has been repeatedly established, opportunity very rarely occurs for their convection, by air currents, from sewer to house drain, in the absence of the intercepting trap; indeed, direct experiments show that the possibility of such convection is so small that its practical importance in relation to danger to health is infinitesimal.

The bacteriological evidence undoubtedly indicates that the bacterial danger of sewer air is incomparably less than the bacterial danger of drain air; and that, therefore, the entry of sewer air into a house is of correspondingly smaller importance bacterially than the entry of drain air.

The foregoing evidence is confirmed by experiments on animals, which show that while animals may be adversely affected by exposure to the concentrated effects of putrefying excrementitious substances, they are not affected, either in their growth and nutrition or in their susceptibility to disease, by exposure to sewer air.

It is also confirmed by the general and epidemiological evidence, which is to the effect that human beings deliberately ex-

osed to the effects of sewer air do not appear to be affected in health ; that the association of the incidence of certain specific diseases, such as enteric fever and diphtheria, with drain defects which allow of the entry of sewer air as well as of drain air into houses, is almost identically the same as the association of similar defects with the absence of disease ; and that the experience of districts without intercepting traps does not show that their absence has been harmful.

The necessity of the intercepting trap, from a bacteriological or epidemiological point of view, has not therefore been established. It appears, in fact, that the characteristic of sewer air which is of practical importance is its smell, and that, therefore, the question as to the necessity or otherwise of the intercepting trap is narrowed down to the issue whether, in any given case, sewer air will be more perceptible or less perceptible to the sense of smell with or without the trap.

Nevertheless, the question is one of serious public health importance. Human beings vary greatly in their perception of smells, and offensive and unpleasant odours affect the comfort and physical well-being, and probably the health, of the individual. It is, obviously, most important that public health authorities should make every effort to secure that both sewers and house drains are so designed and constructed that the opportunities of their contributing smell to the atmosphere shall be reduced in every possible way.

In ordinary cases the smell of sewer air is less perceptible, not more perceptible, when the intercepting trap is omitted, and, chiefly, it would appear, because in the absence of the trap opportunity is afforded for sewer air to escape entirely at a height above the ground. But there are exceptional cases, where the intercepting trap may be required in order to prevent perceptible smell from the escape of sewer air from the tops of ventilating shafts of house drains. Sewage may be so offensive at the escape of sewer air, even at a height, is a perceptible nuisance, so much so that it may be necessary to close as many sewer ventilators as possible, whether at the ground level or at a height ; house drains may be connected with cesspools, flat or storage sewers, or with sewers which are old and foul with deposit ; houses may be built in terraces, one above the other, so that the ventilating shafts of the house drains of one terrace are at or about the level of the ground of another terrace ; and so forth.

As circumstances in this respect vary in different localities, the question whether, in order to prevent nuisance from smell in such exceptional cases, the intercepting trap is or is not required in any locality, or part of a locality, is one which will need to be considered and determined by the local authority and their advisers in the light of local conditions. Where, however, the trap is considered to be necessary or desirable, the measures for protecting against the effects of blocking of the trap should not be neglected, namely, the closure of the open channels in the inspection chamber giving access to the trap, and the construction with iron pipes of the main portion of the house drain, unless this is remote from the house.

The importance of the effect which the presence of the intercepting trap has on the ventilation of sewers, on which much stress has been laid, has probably been exaggerated. The free ventilation of sewers appears to be unnecessary either

for the prevention of pressure of sewer air on traps, or for the safety of sewer men, except in the case of sewers which are large enough to admit them. Even in such sewers, however, it is dangerous to rely on ventilation alone, and special precautions should always be taken. Moreover, it is exceedingly difficult to ensure that sewers are freely ventilated, even when the most elaborate measures for this purpose are adopted. On the other hand, the prevention of nuisance from smell renders it necessary that any openings which may be deemed to be requisite for the ventilation of sewers should not be at the ground level.

The relationship between the splashing of sewage and the temporary presence of sewage microbes in drain air, and the wafting of such microbes to considerable distances by currents of air, which has been established in the course of the inquiry, appears to be a matter of practical importance, whether the intercepting trap is present or not. The bacteriological evidence suggests that if exposure to drain air is related, as many suppose it is, to attacks of sore throat or other septic affections, the explanation may be found in the liability of drain air, unlike sewer air, to carry in suspension large numbers of microbes of sewage origin. It is desirable, therefore, that the possibility of splashing should be taken into account in the construction of drains, in order that it may be

reduced to a minimum. It is likewise important, whether the intercepting trap is present or absent, that the tops of soil pipes and of the ventilating shafts of house drains should be as remote as possible from windows, not only with a view to avoid smell, but also to minimise the chance of sewage microbes, which may be present in drain air, being wafted from them into the dwelling.

SIMPLE METHOD OF CALCULATING WIND-PRESSURE ON ROOFS.

BY W. E. BARKER.

The collapse of the Tay Bridge during a severe storm in December, 1879, directed the serious attention of engineers to what is now recognised to be one of the important questions that have to be considered when designing roofs, buildings, or bridges, that is to say, the question of wind-pressure.

At the time of the Tay Bridge collapse a commission was appointed, and, as a result, a maximum wind-pressure of 56 lb. per square foot was adopted by the Board of Trade as a standard for loaded railway bridges.

For buildings the writer considers this figure to be high. If we take an average horizontal wind-pressure of 30 lb. per square foot on the sides of a building, and the normal component of 30 lb. hori-

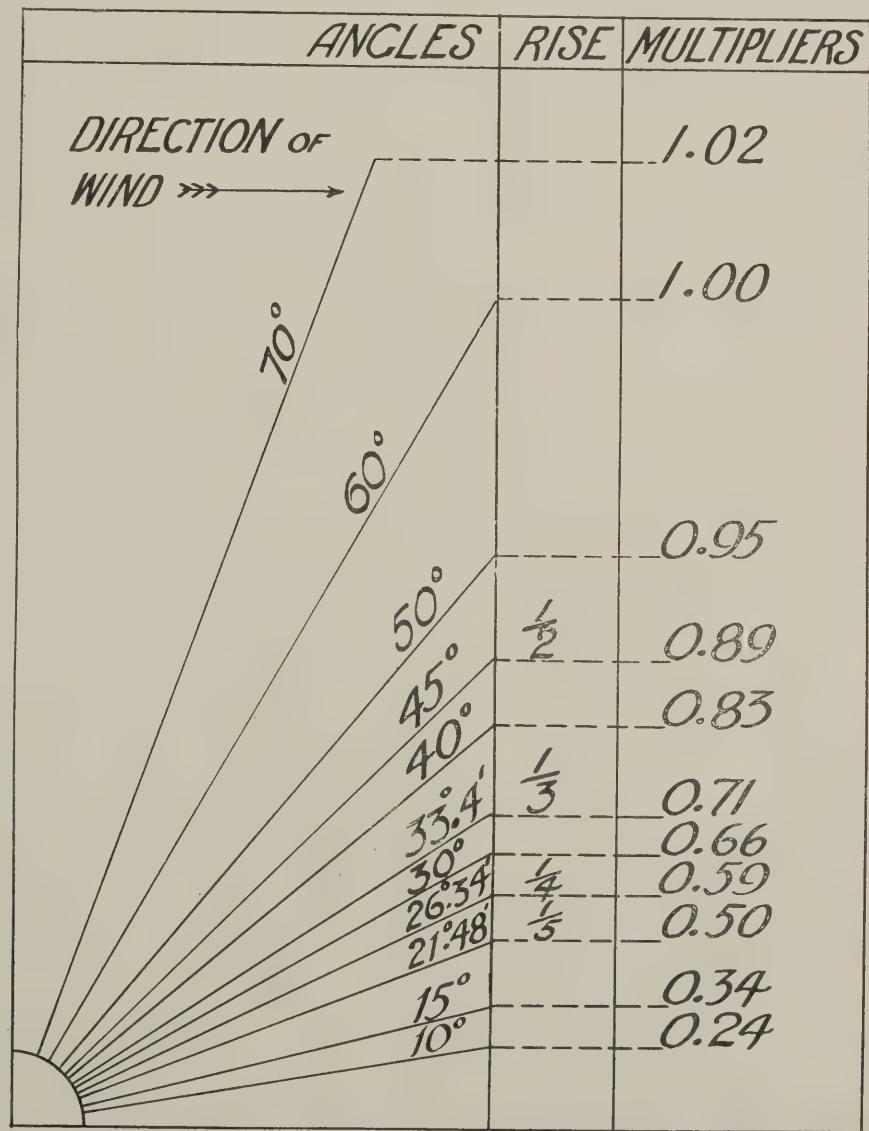


DIAGRAM FOR CALCULATION OF WIND-PRESSURE ON ROOFS.

zontal for the roof, we shall not be far wrong.

The writer has used this figure for a large number of structures, with most satisfactory results. It allows economy of material, consistent with stability and rigidity.

Some little time is occupied in determining the normal wind-pressure upon inclined surfaces by means of Hutton's or Unwin's formulæ, but by using the diagram here reproduced the normal pressure upon an inclined surface can be obtained both quickly and accurately.

For instance, suppose the roof has a pitch of 45 degrees, or a $\frac{1}{2}$ rise, and the wind-pressure is 30 lb. per square foot horizontal. To determine the normal wind-pressure on such a roof, multiply 30 lb. by the multiplier .89 shown on the diagram, and the result will be $30 \times .89 = 26.70$ lb. per foot super-normal wind-pressure.

By placing a tracing of a roof over the diagram the pitch is at once seen, and also the multiplier that should be used to obtain the normal wind-pressure.

BOOK NOTICES.

Building as a Seasonal Trade.

Mr. Sidney Webb has done so much and such excellent work in practical economics—in the patient investigation and explication of industrial phenomena—that he may be said to be the pioneer of a new science, or, at all events, of a new branch of economics, which might perhaps be called industrial sociology. Towards his predecessors, who dealt mainly with the dry bones of the subject, he stands in much the same relation as a skilled anatomist and surgeon stands to an osteologist; and, apparently, he cares less for science in the abstract than for its ameliorative application. He is nothing if not humanitarian. In his preface to "Seasonal Trades," he observes that "the nineteenth-century economists scarcely deigned to notice the seasonal tides upon the industrial ocean; and practically no attempt seems to have been made to ascertain, by specific investigation of facts, how far the current generalisations as to rates of wages and conditions of employment were borne out by the actual phenomena." To take up such neglected work is the object of the "seminar" for social investigation and research which, with the assistance of Mr. Arnold Freeman, Mr. Sidney Webb conducts at the London School of Economics. The natural outcome of such studies is publication. The present book comprises nine chapters, of which the first is occupied by an introduction on seasonal trades; the others dealing respectively with the tailoring trade in London, the waiter, the cycle industry, the gas industry, the London millinery trade, the skin and fur trades, the boot and shoe trade, and the building trade.

Six of the nine chapters are by ladies. That on the building trade is by Mr. Augustus D. Webb, B.Sc., who opens with the remark that, "while it might be supposed that the trade which provided man with his dwellings, shops, and meeting-places, kept them in repair, made alterations to them, decorated them, and when necessary demolished and replaced

them, would be characterised by regularity of employment and gradual but constant expansion, he finds, however, that it is "in fact a trade which affords a most marked instance of irregularity and discontinuity of employment. The demand for builders' work fluctuates from year to year and month to month; the demand for the work of different branches of the trade changes as new methods of construction come into vogue and new materials are used." The total number of males engaged in the industry in the United Kingdom, as recorded in the census of 1901, was about 1,100,000, or nearly 9 per cent. of the total occupied male population aged ten years and upwards. The author finds that, in London, apprenticeship has almost vanished, but prevails to a certain extent in the provinces, especially in the North and in Scotland. An assumed consequence is that, while there are "any number of Scotchmen" in the London trade, only a very few Southerners are to be found in the Scottish building trade; but surely much the same thing might be said of lawyers and clergymen; apprenticeship or training having probably less to do with the phenomenon than has the fact that all roads lead to the capital, which, in the nature of the case, is stronger in attractive force than any of the other centres.

The author shows that employment in the building trade follows sympathetically the cyclic movement covering from six to eleven years, which is characteristic of industry in general; that, in addition to this cyclic movement, the building trade appears to experience a long-period fluctuation of about twice the length of the ordinary cycle; and he finds a general consensus of opinion that the building trade is one of the last to feel a depression in industry, and also one of the last to recover from it. "During 'boom' years contracts are entered into and carried out during depression, but after depression caution leads to few contracts." When a general wave of depression occurs, the building trade is not quick to respond to it, because there are contracts to complete; when prosperity dawns, the building trade does not immediately feel the effect, because people hesitate to spend money on building work until they feel assured that the prosperity is likely to be of reasonable duration.

As to seasonal fluctuations, the statistics show that unemployment is greatest in December, diminishes to about May, slightly increases again in June and July, is at its minimum in August, and then increases again to its maximum in December; the reasons being fairly obvious—seasonal weather and duration of daylight affording a tolerably clear indication of cause and consequence. This, however, is not the whole of the story. The author provides data for assuming that, "So far as climate alone is concerned, one would expect to find that building and unemployment would be at a minimum in mid-winter and at a maximum in midsummer, with a gradual ascent and decline. The figures, however, show that this is not altogether what happens. They confirm the minimum of employment in winter, but show two maxima in the spring and summer. The reason is largely to be found in 'social' causes. The spring maximum is mainly due to the repair and decorating work associated with the annual spring cleaning, while the August maximum is due to new construction plus the alterations, repairs, and decorations carried out in the

holiday season, when large houses are more or less empty of their usual occupants, or when business is slack. The August maximum, therefore, is more seasonal, in the strict sense, than the spring maximum, which is largely due to quasi-seasonal or social causes." Variations for districts are also investigated, and causes and consequences are discussed at considerable length; the conclusion being that, while unemployment in the building trade is a highly complex phenomenon not admitting of any simple or easy remedy, yet there seems to be no insuperable obstacle to stripping seasonal fluctuations of their worst consequences. The means suggested by the author are not startlingly new; but a bald summary would not do justice to them. They should be read in the book.

Statistical Calculation.

A "Reference Book for Statistical Calculations," by Francis Ruff, of Frankfurt-on-the-Maine (London: Constable and Co., Ltd.; 4s. net.) represents, the author believes, the first comprehensive attempt to systematise statistical calculations for the methods of construction commonly in use. A table of moments of inertia and resistance for the common sections of iron is followed by illustrated formulæ for bending moments; and there are calculations for simple and compound trusses, Warren and other girders, various forms of beams, columns, retaining walls, vaults, etc. The diagrams are abundant, and the tables of weights of materials, loads, etc., and other accessory information, increase the value of a manual that would be more serviceable in this country if it were less obviously based on German practice and, in particular, on metrical standards of measurement.

"The Painters' Pocket Book."

Mr. Arthur Seymour Jennings is the producer of "The Painters' Pocket Book: a Practical Reference Guide to Every-day Work," of which the third edition, revised and much enlarged, has just been issued, and he has been assisted by Mr. Noel Heaton, B.Sc., F.C.S., and by Mr. Charles Harrison, lecturer at the Borough Polytechnic. The book contains almost every item of information for which a house-painter or decorator would be at all likely to seek—wrinkles, recipes, tables, prices, a glossary of terms, and a series of illustrations, elucidatory, either of terminology or of geometrical problems, or presenting examples of stencilling and other forms of decoration. The "Pocket Book" is published, price 3s., by John Heywood, Ltd., Deansgate, Manchester, and at 365, Birkbeck Bank Chambers, London, W.C.

A Handbook of Estimating.

"Estimating: being the Analysis of Builders' Prices," by Thomas D. L. Piper (Portsmouth: The Ubique Press, Ltd., 1, Middle Street, 178 pages, 7½ in. by 5 in., price 3s. 6d. net; Part I.), seems to be a conscientious attempt to explain with clearness and simplicity every item in the process of estimating the cost of building work. From most other manuals dealing with the same subject the volume is distinguished by the fulness with which each operation is explained, and sometimes even discussed. This should be an advantage to the beginner. The book contains forty illustrations, many of them useful, but some of them superfluous.

"Seasonal Trades," by Various Writers. With an Introduction by Sidney Webb. Edited by Sidney Webb, LL.B., and Arnold Freeman, M.A. London: Constable & Co., Ltd. Pages xii. + 410, 8½ ins. by 5½ ins., price 7s. 6d.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

Last month we discussed at some length the tendency of the modern architect to shirk mathematics, and hence to miss the present valuable opportunity of making an impression on reinforced-concrete design. It holds aloof mainly on two grounds—that architectural—that is to say, æsthetic—treatment of the material impossible, and that the necessary calculations involve more mathematics than can muster off-hand. The first objection involves an assumption that is largely not entirely gratuitous, and the second, we have contended on previous occasions, appears to imply a question of temperament. A decided aversion to mathematics we should be disposed to regard as an absolute disqualification for reinforced-concrete work, and we cannot altogether agree with those self-complacent gentlemen who seem wishful of conveying (mostly by insinuation) that hatred of "figuring" is the hall-mark of the artist. They will even go the length of suggesting that Wren, being perhaps the most accomplished mathematician of his day, was *ipso facto* no artist, which is demonstrably absurd.

It is not to be hastily assumed that all architects are to be divided into two parts—those who have and those who have not the mathematical faculty. We credit them with much greater variety and complexity, and do not doubt that, at all events, they come a thought nearer to Cesar's partition of "all Gaul." Besides those who are supposed to be incorrigibly mechanical, to the exclusion of art, and those who are hopelessly æsthetic, to the exclusion of mathematics, there are those who occupy a large extent of middle territory, which for the moment may perhaps be regarded as neutral ground. Without being mathematical experts, without being, as "Hudibras" has it, "greater than Tycho Brahe or Errater," they have no distinctly disqualifying disability. Many of them, seeing their increasing amount of work that is getting into the hands of the reinforced-concrete expert, would, as a mere matter of self-preservation, be glad to qualify; and a large percentage should be found as well as willing. Some of them have gone so far beyond mere vague inspiration as to purchase text-books from which to "read-up" the subject. Here, however, they have been commonly contented with a somewhat formidable difficulty, arising from a sort of natural paradox. The better the qualification of the author—not as an author, but as an expert—the more apt he is to present his matter in crude and undiluted form. Like any other teachers, he is often himself too brilliant to understand the difficulties of his pupils, and consequently he merely succeeds in puzzling those whom he sets out to enlighten. In particular, he is apt to create a wrong impression as to the value of rules and formulæ. He appears to exaggerate their importance; and whether the exaggeration is positive or only implicit, the effect is the same—a sort of mild fetish-worship is set up.

This characteristic of text-books has been discerned by Mr. Percy J. Waldram, who, as a lecturer of considerable experience, seems to have become well aware of the limitations which beset the unaided student. Acting upon this knowledge, he has produced, in his "Principles of Structural Mechanics," (London: B. T. Batsford, 94, High Holborn; pp. xviii. + 374, 8 in. by 5¾ in.; price 7s. 6d. net), a treatise in which this drawback is sedulously and expressly avoided throughout. The book, as its title will have made quite clear, is not specifically a manual on reinforced concrete—a subject, indeed, that is expressly excluded by limitations of space. It includes, however, much that the reinforced-concrete specialist must necessarily know; and mastery of the principles of structural mechanics, which it elucidates with unusual clearness, will carry the conscientious student a long way in the direction of that goal.

The purpose of the book may be best explained in an extract from the preface: "A

long but barren search for a simple text-book which would obviate the necessity of explaining to draughtsmen the construction and genesis of those formulæ which are now in common use, has led the author to the conclusion that a book which deals thoroughly with first principles, and which explains not only the application but also the construction of ordinary formulæ, would not be without value to the student anxious to acquire a thorough and practical knowledge. At the same time he ventures to hope that engineers, architects, and others who have to deal with structural problems at frequent intervals, may find of use a book which does not demand a revision of one's knowledge of higher mathematics." We have noticed repeatedly that reinforced-concrete experts are too much addicted to the use of accepted formulæ, or authentic diagrams, which they swallow whole without check or challenge. Mr. Waldram has observed a somewhat similar fault in architectural draughtsmen, who, he says, while acquainted with mathematical and graphic methods of solving straightforward problems in structural design, are frequently reduced to helplessness by slight complications, or even by a small variation from the form in which these problems customarily occur. That may be taken for clear proof that they have no real grasp of the principles involved. That may be a result either of their own lack of comprehension, or of some deficiency in the sources of their information. In either case, the teacher or the text-book is not to be wholly exonerated. The limitations of either are revealed in the results of failing to provide against the limitations of the average student.

So far as we can see, Mr. Waldram, in his *A Groundwork of Principles*, chapters on leverage and graphic statics, beams and girders, walls and foundations, roofs, arches, and domes, columns and shoring,

has left no essential principle unexplained. After a careful perusal of his book—which, by its easy style and frequent citation of familiar examples, makes really interesting reading—the most obtuse of "earnest enquirers" should have at least a tolerably clear comprehension of what he may have formerly found to be the occult mysteries of stress and strain, elastic limit, the paradox of leverage, sines and tangents, graphic statics, triangle and polygon of forces, funicular and link polygons, section modulus, and the rest of the stage properties or stock-in-trade of the expert in construction. Unfortunately the author has been unable to include the several chapters on reinforced concrete which, we gather, he has prepared. They will, it seems, be published separately. If they are as well done as the bulk of the contents of the present volume, they should go very far towards removing the reproach against architects that they do not commonly display keen interest in and competent knowledge of the principles of that system of construction. In the meantime, the book under notice, dealing as it does with the common bases of all forms of construction, is not only useful *per se* to the general architect, but may even afford a good broad groundwork for the more specific study of the details of reinforced-concrete construction. The success of the book depends not merely on the author's obvious mastery of his subject in all its aspects and details, but even more on his uncommon gift of lucid exposition. He has achieved the difficult feat of writing with simplicity that is never inane, and with amplification that is without superfluity.

BRITISH STANDARD SPECIFICATION FOR STRUCTURAL STEEL.

A new edition of the British Standard Specification for Structural Steel for Bridges and General Building Construction (Report No. 15, revised August, 1912) has just been issued. The new issue is of importance in view of the fact that the London County Council (General Powers) Act, 1909, requires that all rolled steel used in the construction of skeleton frame work for buildings shall comply with the requirements of this specification.

Since the first issue of this specification in June, 1906, the committee from time to time had brought before them points which had arisen in connection with its use, and the present issue embodies the necessary amendments in regard to these. Some of the more important modifications to the specification are as follows:

1. The classification of the material dealt with into two categories, A Steel and B Steel.
2. The increase of the allowable phosphorus content in B Steel from .07 to .08 per cent.
3. The increase of the upper limit of tensile strength for plates, sections, and bars (other than rivet bars), from 32 to 33 tons per square inch.
4. The reduction of the lower limit of tensile strength for rivet bars from 26 to 25 tons per square inch.
5. The insertion of clauses dealing with

(a) tests by an independent expert, (b) rejection after delivery, and (c) arbitration in cases where this is not otherwise provided for.

Following the procedure adopted in the revision of the British Standard Specification for Portland Cement, the text of the specification has been settled in consultation with the committee by Mr. A. A. Hudson, K.C. (standing counsel to the committee), with a view of ensuring that so far as practicable, it has the meaning intended by them, and the specification has been remodelled in accordance with his advice.

There are a few diagrams in the text, and the forms and dimensions of the test pieces are shown graphically in an appendix.

The price of the specification is 5s. 2d. post free, and it may be obtained from any bookseller or direct from the offices of the committee, 28, Victoria Street, Westminster, S.W., and is published for the committee by Messrs. Crosby Lockwood and Son, 7, Stationers' Hall Court, Ludgate Hill, E.C., and 5, Broadway, Westminster, S.W.

REINFORCED CONCRETE OFFICES AND WATER TANK, WATERLOO.

The architectural treatment of reinforced concrete is a subject about which there has been much controversy with very little practical effect. Although many hundreds of structures have now been erected on this principle, we can recall few

instances in which the design has been really expressive of the material and at the same time of a good architectural character. Hitherto the majority of reinforced concrete buildings have been finished with an external casing of stone, the new General Post Office in Newgate Street being a fairly recent example. This, however, can hardly be considered a satisfactory solution of the problem. The most successful essay that we have yet seen is the new building at Waterloo Station shown by the accompanying illustrations. The treatment is thoroughly architectural, and well within the legitimate scope of the material. The two lower floors provide office accommodation, the top floor being utilised as a water tank with an approximate capacity of 60,000 gallons. Between this tank and the second floor there is an intermediate floor containing the pipes and valves which control the water supply. The building stands over two arches at the extreme limit of the extension which has recently been made on the north side of Waterloo. Access is gained to it from the station by a doorway on the rail level. The tanks are lined with $\frac{3}{4}$ -in. asphalt, the roof and gutters being covered with similar material. Mr. J. W. Jacomb-Hood, chief resident engineer of the L. and S.W. Railway, is responsible for the design of the structure, which has been erected on the Hennebique system of reinforced concrete.

Waterloo Station is at present undergoing entire reconstruction, the southern portion, with a fine approach from Westminster Bridge Road, having already been completed.

HINTS ON INSPECTING CONCRETE WORK.

Concrete is apt to suffer more than any other building material from inferior workmanship. While the necessity of inspection depends to a certain extent upon the nature of the material and the production, it is always a question of just when and where, and to what extent, it pays to inspect. In concrete work inspection must be made of the component parts. The sand, the gravel, the cement, and the water must be examined, as well as the concrete while it is being mixed and poured. The scope and possibilities of a system of inspection enlarges greatly with specialisation.

Inspection should be planned to accomplish at least expense the best results, which may be enumerated something as follows: (1) To prevent loss or defects by accidents or delays; (2) to prevent loss of time and material on work already beyond repair; (3) to prevent the necessity of replacing defective work; (4) to prevent decrease in quality because of the demand for increase in quantity; (5) to point out imperfections in alignment, methods, and material; (6) to record proper allowances for unavoidable extras; (7) to draw the attention of the superintendent to workmen who must be better instructed or trained; (8) to stimulate good will through fairness, in fixing responsibilities.

Inspection organised to cover any one or all of these purposes will be similar in personality, varying only with the degree of perfection required. Before it can be

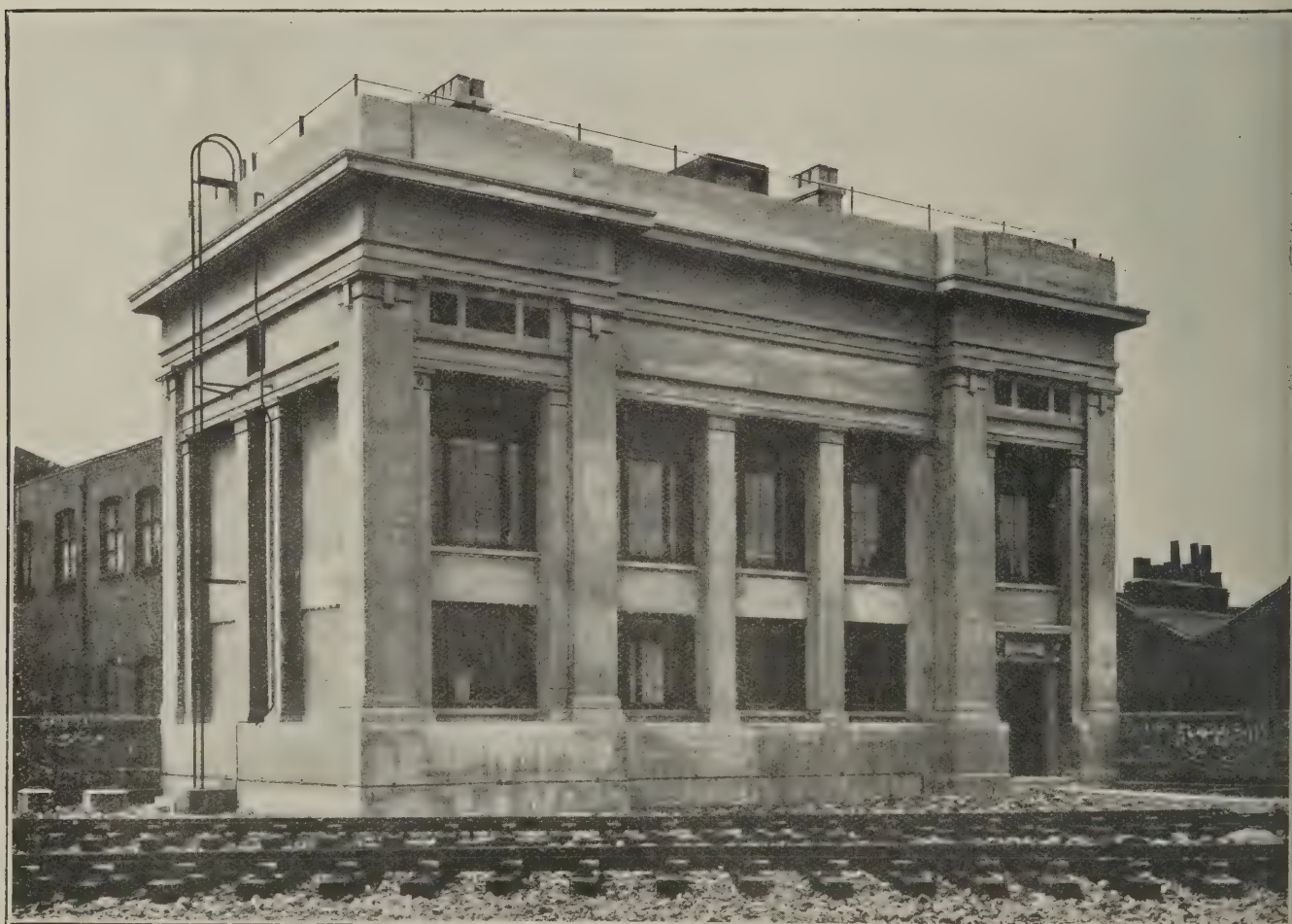


Photo: Architects' and Builders' Journal.

REINFORCED CONCRETE OFFICES AND WATER TANK, WATERLOO STATION, LONDON: VIEW FROM RAIL LEVEL.
J. W. JACOMB-HOOD, CHIEF ENGINEER.

determined just when and where it pays to inspect, the following conditions must be satisfied: (1) Responsibility must be fixed with certainty; (2) the inspection must not cause unnecessary friction; (3) the inspector must have to do with quality only, not design; (4) the responsibility for defective work must be placed upon the workman as well as upon the inspector.

As inspection has for its purpose the pointing out of the defects, it is necessary for the inspector to be able to locate the cause of the defect. One of the most foolish things that can be done is attaching blame to the wrong person, and unless it is possible to discover immediately just when and where the cause of the defect lies the fixing of responsibility is very difficult. It is therefore necessary to have the material on the ground in sufficient time for thorough inspection before it is mixed, for even after the inspector has detected the defect the responsibility is not necessarily fixed. The error may be due to wrong specification, poor material, defective measurement, defective mixing, or even unsuitable weather conditions. Therefore instructions and specifications should be in writing.

No system of inspection which would simply complain of defects, without attempting to trace the cause or to assist in the improving of conditions, will be of any assistance. So it becomes necessary, if full benefits are to be derived from rigid inspection, not only to point out the defects, but the inspector should be in a position to trace the cause and to suggest a remedy. Defective work must be detected as soon as possible, so that the conditions under which the work was done may be fresh in the workman's mind, and the responsibility with certainty attached to him.

To point out defects will not necessarily stop the repetition, and although it may be the duty of the inspector to trace the cause, fix the responsibility, and suggest the remedy, he must not have to do with applying the remedy or of interfering with the workmen. When he has reported defects in material or workmanship to the engineer and contractor, or their representatives, he must content himself with waiting the corrections through the proper officials, although it should be within his power to stop or reject the work until there is an opportunity for investigation, and to take upon himself these responsibilities he must have knowledge equal to that of the superintendent of the work.

Inspecting alone will not reduce bad workmanship to a minimum, but the workman must be supplied with proper tools, proper instructions, and must be trained in his work and held responsible for the quality of his work. He must be trained to inspect his own work. Cases have been known where the men were paid a bonus for saving cement, and where this is the case it requires almost as many inspectors as men to secure compliance with the specifications. Where it is known that the contractor is encouraging his men to skimp the work the inspector should pay his information before the architect, and at once vigorous measures should be taken to remove such contractor from the work.

It should be the duty of the inspector to see that all forms are erected on the lines laid down by the architect, that these forms are stiff and well braced, and that all material and workmanship are in accordance with specifications. He should look after the removal of forms to prevent injury to the concrete.

Form work is the most difficult to get properly placed, and it is much easier to



Photo: Architects' and Builders' Journal.

REINFORCED CONCRETE OFFICES AND WATER TANK, WATERLOO STATION:
VIEW FROM YORK ROAD.

develop a good inspector out of a good carpenter than out of a good concrete worker.

If the work is to be done at night under artificial light, it will be necessary to increase the staff of inspectors, for concrete that can be detected in the day time, by colour, will not show lack of proper mixing of materials under artificial light. In fact, where high-class work is required, or in finishing surfaces, as a rule it is better not done at night at all.

The cost of inspection is variable, being in some cases as low as 1 per cent. of the total cost and as high as 2½ per cent. As a usual thing 2 per cent. should be allowed for inspection, and good inspection is cheap at that price.

PRACTICAL NOTES ON CONCRETE AND STEEL.

Cast-iron Cores in Reinforced-Concrete Construction.

Tests by Dr. von Emperger on the use of cast-iron columns in connection with reinforced-concrete construction and bridge building show that such iron columns used as cores for reinforced-concrete columns,

with hoop reinforcement, give excellent constructive parts and allow great changes in form without breaking, in addition to the fireproof qualities, which the iron columns without concrete-reinforcement cannot claim.

Waterproofing a Concrete Roof.

A concrete roof is stated to have been rendered waterproof with a half-inch finish coat of 1:2 mortar, applied before the concrete had set, and trowelled smooth. A solution of 1 lb. of concentrated lye and 5 lb. of alum was made up with 2 gal. of water and used by diluting one part of it with 30 parts of water. A mixture of 2 lb. of cement in a pint of this diluted solution was applied in two coats to the fresh mortar. A large reinforced-concrete pipe was also waterproofed in much the same manner, and has likewise remained tight for several years.

The Tensile Strength of Concrete.

Professor A. N. Talbot has stated that the failure of concrete in compression may in cases be due to lack of tensile strength, allowing the concrete to split off laterally, as is more or less characteristic in compression failures. Moreover, the tensile

strength is important in bond between steel and concrete, while shearing and diagonal tension failures are more likely to occur with concrete of low tensile strength.

Removing Rust from Steel Pipe.

Pickling steel plates in hot dilute sulphuric acid in order to remove mill scale, rust, and dirt, has been the subject of recent discussion. It was stated that, with water pipes of 9 ft. to 9½ ft. diameter, a weak and comparatively inexpensive solution is much more effective in securing a proper cleaning than a strong solution, and that heat, 120 to 125 deg. Fahr., greatly accelerates the action of the acid. On some work a 5-per-cent. solution of oil of vitriol was used. In other cases a 5-per-cent. solution of sulphuric acid at about 180 deg. Fahr. has been successfully employed.

A Combined Curb and Gutter of Concrete.

A combined curb and gutter of concrete

of recent construction is composed of 1 part Portland cement and 3 parts sand, and is made in blocks of uniform length not exceeding 7 ft. The blocks rest upon a gravel base, 6 in. thick, in which is laid a 3 in. tile drain where necessary. The width of curb is 6 in., and the distance from its top to the gutter from 6 to 8 in. The depth of the block is from 12 to 14 in., and the width of the gutter from 12 to 24 in. Old specifications provided for the usual form of concrete curb and gutter composed of a 1.3.6. concrete core and a 1.2 facing 1 in. thick; but it was found that the cement facing did not adhere properly to the concrete core and would peel off, leaving the concrete backing exposed. The new form of gutter, however, is said to be highly satisfactory, and costs very little more than the one formerly used.

Depositing Concrete under Water.

Concrete may be deposited successfully under water, if so handled as to prevent the

washing of the cement. Cofferdams should be sufficiently tight to prevent current through the pit, and the water in the pit should be quiet. The concrete should be deposited in place either by means of a drop-bottom bucket or a tremie, and should not be allowed to fall through the water. Where a bucket is used, it should be carefully lowered to the bottom and raised to the surface, so as to cause as little disturbance as possible of the water. Where a tremie is used, it should be kept filled with concrete up to the top of the water level, and the discharge end should be kept buried in the freshly deposited mass to prevent emptying, and raised a few inches at a time as the filling progresses. The surface of the concrete must be kept as nearly level as possible to avoid the formation of pockets which will retain laitance. Where concrete is not deposited continuously, all sediment should be removed from the surface of the concrete, by pumping or otherwise, before depositing fresh concrete. The concrete should be a 1.2.4 mixture and of a quaking consistency. Freshly deposited concrete should not be disturbed. Where the flow of water through the pit cannot be prevented, concrete should be deposited in cloth sacks.

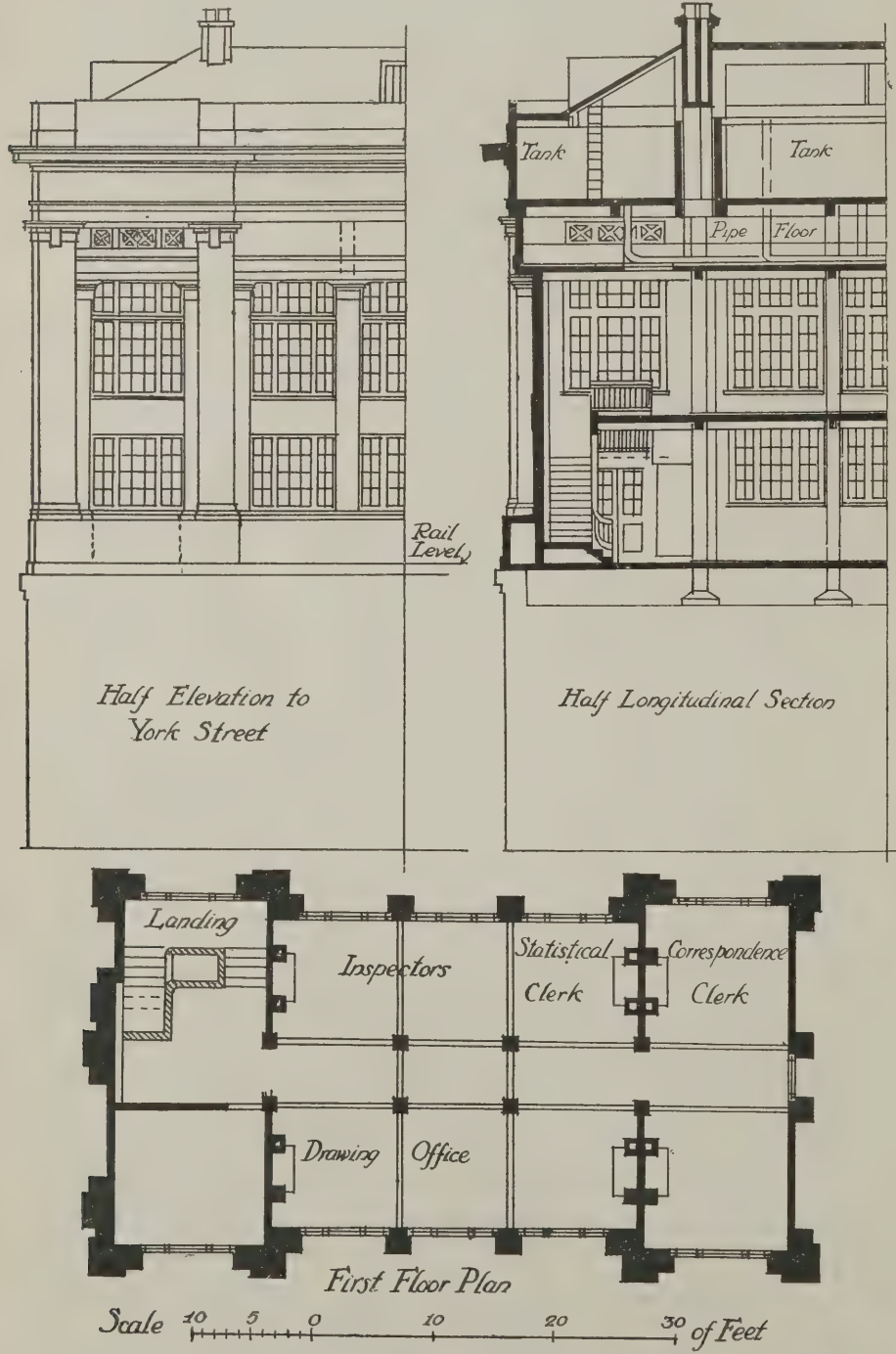
Weight of Concrete.

In a recent report issued by the Bureau of Standards, the weight per cubic foot of concrete as moulded into beams for flexure tests and into cubes and cylinders for comparison tests is given. The specimens were weighed at the ages of 4, 13, 26, and 52 weeks, and for each age generally 21 specimens were averaged. As the concrete showed no increase of weight with age, only the general averages are given below:

	Kind	Beams	Cylinders	Cubes
		lbs.	lbs.	lbs.
Granite concrete	148	148.6	147.7
Limestone concrete	146.6	146.7	145.7
Gravel concrete	144.1	144.8	144
Cinder concrete	110	119.3	118.1

Concrete v. Steel.

It seems that Commissioner Harris, of Toronto, has recommended that steel be used for the Bloor Street viaduct in that city. Commenting upon this recommendation, a Toronto contemporary (the "Contract Record") offers the following observations: "Statistics prove that far more important structures with much more serious engineering difficulties have been successfully erected of concrete, and experience teaches that where concrete can be used its artistic appearance is likely to surpass that of steel. When the cost of maintenance is considered, the arguments are all in favour of concrete. The Bloor Street viaduct is to be a feature among Toronto's public works, and the citizens do not want to have to apologise for an ungainly looking structure if it is at all possible to have one which will be a credit from an artistic point of view. All this is not said with a view to deprecating the use of steel. It may be that steel will be found to be the best material for this particular case. The point at issue, however, is that the mere declaration of Commissioner Harris, well considered as it may be, should not be accepted in such an important matter. Let concrete and steel be both given a fair opportunity to compete, and no one will have any cause to fear that a serious mistake has been made." This solicitude for "architectural appearance" is distinctly encouraging. A steel bridge can never be made to look like anything but an engineering structure; and any attempt to disguise this character always makes matters worse.



REINFORCED CONCRETE OFFICES AND WATER TANK, WATERLOO STATION: ELEVATION, SECTION AND PLAN. J. W. JACOMB-HOOD, CHIEF ENGINEER.



REINFORCED CONCRETE WAREHOUSE, STAMFORD STREET, LONDON, S.E.:
VIEW SHOWING CENTERING IN POSITION.

REINFORCED CONCRETE WAREHOUSE.

The accompanying illustrations show a new reinforced concrete warehouse which is now in course of construction for Mr. J. Insbury in Stamford Street, London, E. This warehouse, which measures approximately 165 ft. long by 54 ft. wide, comprises six floors and roof. With the exception of the elevations to Bennett Street and Stamford Street, the whole skeleton is constructed in reinforced concrete, lintels being provided in the outside walls to carry the brickwork, which has a thickness of 2 ft. 3 in. at the bottom. The interior columns had to be kept down to a small size as possible; and to carry the six floors heavily loaded a large percentage of steel was necessary, one of the four columns requiring nearly 40 sq. in. of steel. On the ground floor, three loading docks, each 20 ft. by 20 ft. and 4 ft. 5 in. below ground level, have been provided, each designed to carry a ten-ton axle load. Each floor consists of a $4\frac{1}{2}$ in. slab carried on secondary beams 5 ft. to 6 ft. apart. This $4\frac{1}{2}$ in. floor is composed of 6 in. of concrete and 1 in. of granite finish laid simultaneously with the concrete. The secondary beams are 14 in. deep below slab and 7 in. wide, having flanges varying from 11 ft. to 15 ft. 5 in. The secondaries are carried on main beams 18 in. below slab, and 10 in. and 12 in. in width; the span of the main beams varies from 12 ft. to 22 ft. 6 in. To carry the heavy road traffic in Bennett Street a superload of 10 cwt. per square foot was allowed on the roof of the vaults, and a corresponding lateral pressure on the retaining wall.

The foundations are composed partly of independent footings to columns, and partly of strip footings of various lengths and widths. Some trouble was experienced with the ground, and the foundations had to be carried lower down than at first intended, and in one case piles had to be driven 12 ft. below foundation level.

The reinforcement throughout is with

"indented" steel bars, supplied by the Indented Bar and Concrete Engineering Co., Ltd., who are responsible for the engineering design of the reinforced concrete construction.

The architect is Mr. A. Sykes, F.R.I.B.A., by whose courtesy members of the Concrete Institute have been enabled to pay a visit of inspection to the work.



WAREHOUSE, STAMFORD STREET:
VIEW OF REINFORCED CONCRETE FLOOR IN COURSE OF CONSTRUCTION.

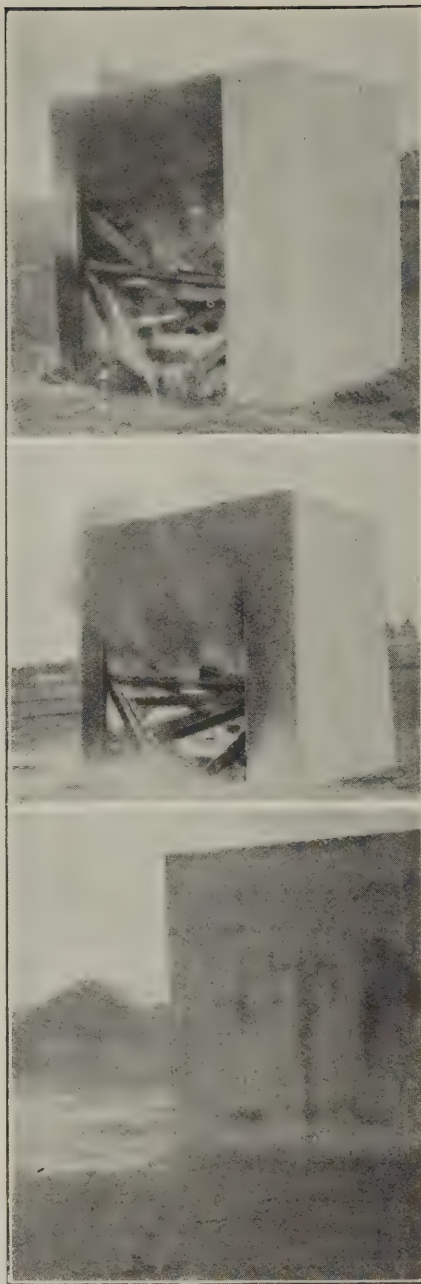
FIRE AND SOUND TESTS
WITH "HY-RIB."

Some interesting fire and sound tests have recently been made with "Hy-rib," the metal lathing introduced by the Trussed Concrete Steel Co., of Caxton House, Westminster, and the results in both cases have given complete satisfaction. The fire test was carried out on a piece of ground adjoining the works of the Kodak Company at Wealdstone, Harrow. For the purpose of the test a small structure of the dimensions shown in the accompanying diagram had been erected. It consisted of "Hy-rib" lathing, wired together, and covered with plaster composed of three parts of sand to one of Portland cement, finished to a total thickness of two inches, the final coat being a mixture of two of sand to one of cement. The hut, as it may be termed, was built immediately upon the ground level, having no foundation and no structural support of any kind. At the time of the test it had been standing for a fortnight; and there can be no doubt that in its immature condition the test to which it was subjected was very severe; so severe, indeed, as barely to be justified, had it not been considered advisable to test "Hy-rib" partitions under the most adverse conditions. Despite the disadvantage of a strong wind, the result of the test was highly successful, affording indisputable evidence of the efficiency of "Hy-rib."

The interior of the hut was filled with timber, over which a quantity of paraffin was poured. This combustible mass being ignited, the fire spread rapidly, its severity being intensified by a strong north wind which blew directly into the opening. So great was the heat that, only a few minutes from the start it was impossible to approach within a distance of twelve feet of the open front. The three plastered sides, however, were quite cool, and even when the fire had lasted for an hour the heat had not sufficiently penetrated to prevent the application of the bare hand.

The fire was constantly replenished with fresh supplies of wood in order to maintain the high level of the temperature. The test, which lasted for an hour, was easily withstood by the "Hy-rib," although, as already mentioned, the lathing was simply wired together without any pretence to structural stability.

As a partition test, the result gave complete satisfaction. We reproduce a few photographs showing the progress of the test. The top view was taken shortly after



VIEWS OF HUT DURING TEST.

the beginning of the test, the middle one at an intermediate stage, and the bottom one at the finish, the back of the hut being shown after subjection to a stream of water at high pressure for about seven minutes. As will be seen, the structure remained wholly intact.

The experiments made with "Hy-rib" for the purpose of ascertaining its resistance to the transmission of sound were conducted by Messrs. David Kirkaldy and Son, Southwark Street, London, S.E. For the purpose of the test three telephone cabinets were constructed to the following dimensions: 3 ft. by 3 ft. by 6 ft. 6 in. One of the cabinets was constructed with "Hy-rib," one with fibrous plaster slabs, and one with breeze concrete slabs, all being of the same dimensions, thickness, and detail. The "Hy-rib" cabinet was built with sheet reinforcement (28 gauge), coated each side with cement and sand mortar (1-3), and rendered to a smooth surface inside and out to a finished thickness of two inches. The cabinets were fitted inside with electric bells, which were interchanged and separately rung in order to make the test fair and equal in all three

cases. In the result "Hy-rib" was found to be far more sound-proof than either of the other materials. The official verdict was as follows: "Under a varied and repeated series of observations we find that the C cabinet (constructed with "Hy-rib") shows distinctly greater resistance to the transmission of sound than either A or B."

A REINFORCED CONCRETE
CHIMNEY.

A reinforced concrete chimney protected on the outside as well as on the inside has recently been completed at the new power house of the Weber Works of the International Harvester Company at Auburn, Illinois. No forms were used, but the concrete core was deposited between a fire-brick wall on the inside and a dovetailed radial pressed face brick wall on the outside. The recess on the inner side of the radial brick is similar in shape to one end of a cement briquette. Into this the concrete is rammed, bonding the brick shell to the concrete core, and thus the exterior presents the appearance of an all-brick chimney, and inside all concrete is covered with $4\frac{1}{2}$ in. of fire brick.

This chimney rises 200 ft. above the ground level, is 14 ft. 8 in. in diameter at the bottom, tapering gradually to 10 ft. 6 in. at the top. The walls are 2 ft. thick at the bottom and 1 ft. at the top. Only one layer of brick is used on the outside and one layer on the inside, and the balance of the wall consists of a concrete body reinforced with vertical and horizontal twisted steel bars. These brick walls are each $4\frac{1}{2}$ in. thick, thus leaving 9 in. of brick work and the balance of concrete. Pressures due to wind velocities of 100 miles per hour were assumed, and the weights are said to be such that the reinforcing is simply a factor of safety, the resultant falling within the middle half of the base of the shaft.

Construction of the chimney was carried up in successive lifts. The outside wall first was carried up to a height of 3 ft. Vertical and horizontal reinforcement was placed in the centre of the concrete section and a wall of fire brick, 9 in. by 5 in. by $4\frac{1}{2}$ in. each, was built up even with the outside wall. The latter was allowed to set for at least eight hours to obtain sufficient strength to retain the concrete which was deposited in the space between the two brick walls.

Concrete was mixed in the proportion of one part Universal Portland cement to three parts torpedo sand.

Starting at the bottom with 1-in. twisted steel bars, the vertical reinforcement decreases in size at the 60 and 120 ft. elevations to $\frac{3}{4}$ in. and $\frac{1}{2}$ in. respectively. The vertical bars are spaced uniformly on 22-in. centres. The $\frac{1}{2}$ -in. square horizontal rings are bent cold into a circle with a lap of at least 12 in. at the end and are spaced as shown on the plan; namely, double rings placed 8 in. apart vertically for the lower 60 ft. of the chimney, then single rings placed 8 in. apart vertically

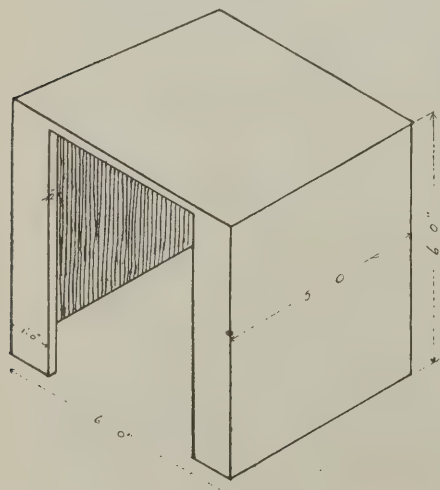
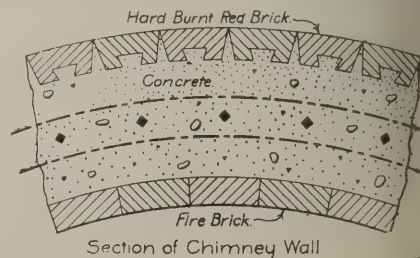


DIAGRAM OF TEST HUT.



Section of Chimney Wall

the next 60 ft., then single rings placed in. apart vertically for the balance of the height of the chimneys.

A reinforced-concrete stepped foundation rock 30 ft. square and 7 ft. thick, supporting the solid concrete octagonal pedestal 10 ft. deep and 19 ft. in inscribed diameter, rests on blue clay on which maximum pressures were assumed to be 4,000 lb. per square foot. The vertical reinforcing rods extend from the foundation through the pedestal into the core.

To strengthen the opening for the 6 by 6 ft. steel breech pipe, brick-faced casters of reinforced concrete are carried down to and tied into the pedestal.

The chimney was built by the Wiedersheim Construction Company, of St. Louis.

A NOTABLE GRAIN ELEVATOR.

So purely utilitarian a building as a grain elevator does not seem to offer much scope for architectural design, and such dignity as it may happen to possess is likely to be spontaneous and unpremeditated, arising from deft adaptation to purpose rather than from any conscious endeavour to produce æsthetic effect. The reinforced grain elevator at Montreal here shown is a good illustration of this. Although the architect probably had to consider fitness "first, last, and all the time," without paying any particular attention to mere appearance, the result is a very successful piece of building, which merges into genuine architecture. With its

towers springing up from the square masses below, it resembles to some degree the piled-up houses so characteristic of certain Italian towns.

The elevator has been built by the John S. Metcalf Co., Ltd., at Montreal, where two, or perhaps three, more of similar type are to be completed by 1915. The construction throughout is of reinforced concrete.

THE STRENGTH OF CONCRETE POLES.

Tests on reinforced-concrete poles have been recently conducted by the Carnegie Steel Co., with the view of determining the relative cost and strength of that material as compared with wood for such construction. The poles tested were 32 ft. long, 10 in. square at the butt, and 6 in. square at the top. All corners were bevelled, and iron steps bent up $\frac{3}{4}$ in. were inserted in the forms before placing the concrete. The mixture used was 1 part of Universal Portland cement, 2 parts bank sand, passing a $\frac{1}{4}$ -in. screen, and 4 parts crushed limestone, passing a $\frac{3}{4}$ -in., but retained on a $\frac{1}{4}$ -in. screen. About one barrel of cement, $\frac{1}{4}$ yd. of sand, and $\frac{1}{2}$ yd. stone were used in the construction of each pole.

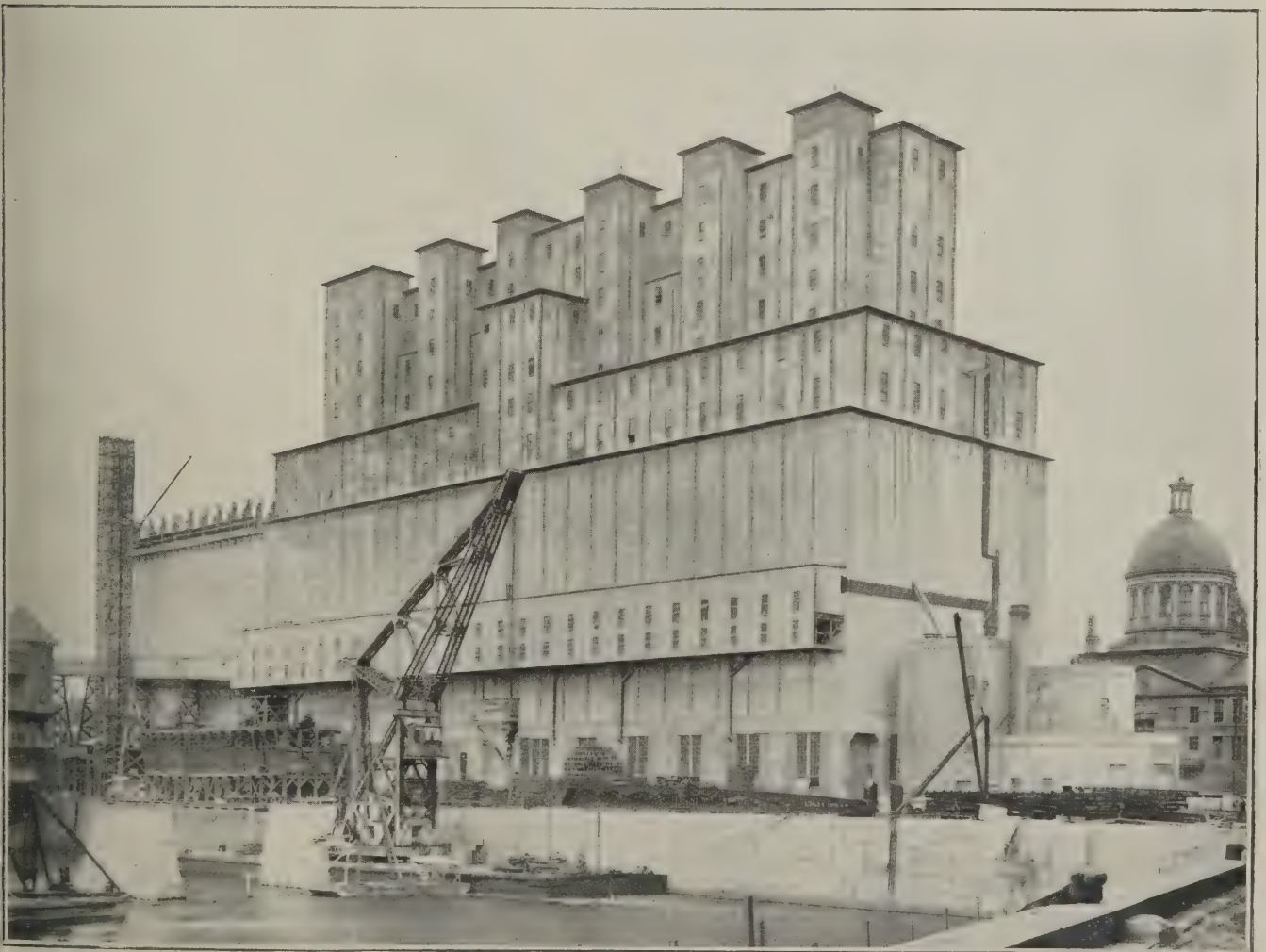
The reinforcement consisted of four groups of twisted rods at the corners placed not less than $\frac{3}{4}$ in. from the surface. Each group was made up of one $\frac{1}{2}$ -in. rod 32 ft. long, two $\frac{1}{2}$ in. rods 24 ft. long, and two 3-16-in. rods 16 ft. long. The reinforcement

was thus proportioned to the decreasing stress towards the top of the pole. Sheet-steel separators held the reinforcement in place, and were cut away to avoid breaking the continuity of the concrete above and below the separator.

The forms used consisted of an upper and a lower section held together by bolts, the lower being a single piece, while the upper was made up of a series of units beneath which the concrete was forced. The poles thus made weighed about 2,500 lb., or five times the weight of a wooden pole of the same length.

The tests were conducted with two concrete poles and a 32-ft. chestnut pole under the same conditions. It was found that poles of wood showed practically the same deflection as those of concrete up to 2,000 lb., the load being applied at right angles to the pole and at the top. The deformation at 2,000 lb. amounted to $25\frac{1}{8}$ in., this loading being far greater than could ever be experienced in actual use. For deflections of less than 15 in., the concrete pole showed no permanent set. The test on one of the poles was carried to destruction, and failure resulted at the point where the 24-ft. reinforced rods ended, the concrete being crushed for about 3 ft. above and below the break.

The results obtained showed that the cost of manufacture of wood poles is thus from one-half to two-thirds that of the concrete poles, but their life of usefulness is from ten years to a maximum of twenty, whereas the life of a concrete pole is practically unlimited.



REINFORCED-CONCRETE GRAIN ELEVATOR, MONTREAL.

Photo: Local Press.

THE OVER-MIXING AND UNDER-MIXING OF CONCRETE.

The mixing of concrete is a subject that has given rise to very considerable difference of opinion; and is one upon which the record of observations derived from actual practice is always welcome; for close attention to detail is of the utmost consequence at every stage of reinforced-concrete construction; and by no means the least important of the many steps which have to be taken with extreme wariness is the operation of mixing, wherein the materials for the first time are brought together and by thorough agitation worked into a homogeneous plastic mass.

The operation must continue until, sensibly, the inert and solid particles, fine as well as coarse, are thoroughly coated with the cement cream, and themselves occupy the most intimate relationship possible one to another.

The proper degree of mixing may be gauged simply by the appearance. It is an indication that the operation has continued long enough when the mass assumes a uniform colour and a dense, smooth appearance, or, in other words, becomes thick and gruelly.

The amount of water used in mixing is clearly of prime importance. This must be adjusted so that the mass on completion of the operation is just the proper consistency. To gauge it to a nicety and keep it right, requires the utmost care and vigilance. The value of a good man thoroughly trained to this task is hard to overestimate. He becomes not only an expert judge of the degree of mixing and the proper consistency, but of the correctness of the proportions.

There should be enough water to lubricate the mass thoroughly, such that when done and ready to place it should be soft enough to flow, but not to separate.

If there is too much water, the mass will lack coherency, tend to separate; if too little, it will be dry and crumbly. Both extremes are bad, but the latter is rather worse, at least from a practical standpoint, than the former. In fact, a slight excess is sometimes desirable, and on a practical basis justifiable, for the reason that it facilitates the mixing and placing, the imbedment of steel, and the securing of a smooth surface finish. On the other hand, too dry a mixture not only is more difficult, therefore more expensive, to mix and place, but, in the case of reinforced concrete, lacks the elements essential to a thorough union of the two materials. Not only that; it is deficient in strength and density, and is far more liable to disintegrating influences. Too wet a mixture is also deficient in strength and density, although not in the same degree as too dry; it is the lesser of two evils.

Tests lead to the belief that the tensile and comprehensive strength are alike affected by both age and consistency. The effect on the strength of the variation in consistency has been clearly shown. In almost every case the concrete of the damp consistency is the strongest and that of the wet consistency the weakest. Attention has been called to the fact that the damp consistency used was much wetter than that used in making mortar building blocks, for which the same conclusions may not apply. The effect of the consistency on the strength seems to depend to a great extent on the behaviour of the concrete while being tamped, and to the method used in tamping. Great care was taken to tamp all the concretes in the same manner. The thorough mixing of the concrete is absolutely essential, and has a marked influence on the consistency.

While it is true that in almost every instance the drier mixtures give the greater strength, it does not follow that dry (or damp) mixtures should be used in construction. Practical considerations warrant the use of a wet mixture. The difficulty in securing efficient tamping and a smooth finish in a damp concrete, the loss of strength due to the unavoidable drying out of the concrete used above water, the difficulty of securing in reinforced concrete an intimate union with the steel, and the far greater ease of placing wet concrete, all seem to warrant the sacrifice of what in many cases is but a slight difference in strength for a greater ease of manipulation and a thorough bedding of the steel, which is of the utmost importance in reinforced concrete work.

It is evident, therefore, that: (1) The strength is affected directly and considerably by the consistency; and (2) the consistency is markedly affected by the thoroughness of the mixing. The utmost care must be taken to see that these requirements are met.

There is another very practical way of testing the consistency. It should be such that the concrete will flow through a chute or closed channel freely and yet without separating. If too dry, it will be found to clog up the channel, to pile up on the chute, and, if it moves at all, to crumble and roll in parts. If too wet, it will be found to separate. These are facts of prime importance, and have a vital bearing on the economics of concrete construction. There is little question, Mr. H. F. Porter supposes, that, eventually, concrete will be distributed entirely in this manner, making use of the principle of flow of liquids. It is thus that Mr. Thomas Edison proposes to cast houses in one operation of pouring. Moreover, the practicability and economy of this method for ordinary construction has already been demonstrated, in the case of the Christian Science Church in Los Angeles, California, completed in 1909, which is entirely of concrete, the material having been placed in the moulds by means of a flexible pipe system operating from a central tower. Not only were marked economies hereby effected, but a far more homogeneous concrete, of greater strength and more uniform appearance, was secured. It was found on this job that the mixing must be thorough and the consistency right, otherwise the concrete would not work properly; if too dry it would clog the pipe; if too wet, it would separate; only when just right would it flow through the pipe easily. Considerable time was saved in placing, which made possible the handling of the material without running the risk of premature induration. Thus, in every way, maximum efficiency was found to be coincident with maximum economy.

In recorded experiments, continuous agitation of the mix for two hours is seen to have increased the strength nearly 20 per cent. over the strength after the first few minutes of mixing, such as is ordinarily considered adequate. Further continuation, however, of the operation is seen to have been attended by a progressive falling off in strength. The inference is that the mixing, while it needs to be thorough, at the same time must be expedited as much as possible, in order not to encroach upon the periods of crystallisation. While the effects of continuous agitation is, undoubtedly, to postpone the setting, nevertheless there must ensue a period when the setting can no longer be delayed without injury to the product. Thus there is the danger of over-mixing, as well as under-mixing. Of course, there is little likelihood of this extreme occurring in practice, unless exceptionally, by

accident. On the contrary, the likelihood is almost entirely the other way; the great difficulty with all concrete work is to have the mixing done thoroughly enough; the temptation is strong to make haste at the expense of the thoroughness of mixing. Still, over-mixing is a contingency with which, on occasion, to reckon. Such is the situation, when, owing to unexpected circumstances, the charge in a concrete mixer cannot be taken away and distributed for a considerable length of time. The question is—How long may a batch of materials continue to be revolved in machine without suffering serious loss of strength?

The writer once had an experience which bears directly upon this point. It so happened on a certain job that the noon hour found the concrete mixer charged, and the foreman, instead of working a few minutes' overtime in order to dispose of the charge, allowed it to remain, but kept the machinery going. The writer, arriving on the scene shortly afterwards, while the men were at lunch, discovered the condition of affairs, and promptly forbade the use of this batch. Contrary to his instructions, however, while he was on another part of the work it was hoisted to the floor, and he returned to the spot just in time to intercept it. He ordered it to be cast aside upon a portion of the floor placed some days before and already fairly hard. He supposed that it had been ruined by the protracted agitation. Much was his surprise, therefore, and the foreman's delight, to find the discarded concrete flint-hard the next day, and adhering so tightly to the floor slab as to require painstaking picking to remove. Moreover, it was the smoothest and densest appearing concrete, and the most uniform in colour and texture, of any concrete he had seen in practice. His one regret was that a sample had not been secured for a strength test. This was several years ago. Since then examples and experiments have multiplied to corroborate the writer's observations, and to establish the wisdom of much more thorough mixing than has, in times past, been the practice.

CONCRETE FLOOR JOISTS.

Reinforced-concrete I-beams for use as floor joists have recently been built and tested. The two joists tested were 16 ft. long and 12 in. deep, with 8-in. flanges, and weighed about 50 lb. per foot. They were composed of 1:2:4 concrete, using Universal Portland cement with a slag aggregate in one case and a stone aggregate in the other. The reinforcement consisted of two $\frac{1}{2}$ -in. and one $\frac{3}{8}$ -in. round bars, the latter bent up at the quarter points. The slag joist was tested when twenty days old, and the stone when thirty days old. They were placed side by side on piers with a clear span of 14 ft. 6 in., and were loaded with sacks of cement, so placed as to prevent arching. The joists were designed for a live load of 100 lb. per square foot, and under a load of 280 lb. per square foot slight air cracks were observed in the lower flanges of the joists. The load was increased up to 425 lb. per square foot, at which point the joists were deflected $\frac{3}{8}$ in. This load was allowed to remain in place for twenty-four hours, and upon removing it the joists showed a permanent set of $\frac{1}{8}$ in. According to the engineers who conducted the test, the fibre stress in the steel under these conditions amounted to 47,600 lb. per square inch, and in the concrete to about 1,780 lb. per square inch.

NEWS ITEMS.

Resignation of Nottingham City Architect.

Mr. F. B. Lewis is resigning his position as City Architect of Nottingham, through ill-health.

"Titanic" Memorial at Belfast.

Sir Thomas Brock, R.A., has been selected to design and execute this memorial.

A New Brick Company.

The Upminster Brick Co., Upminster, Essex, has just been registered as a private company with a capital of £7,000 in £1 shares.

A New London Printing Works.

Messrs. Spalding and Myers are the architects of the new printing works now being erected in Emerald Street, Theobald's Road, by Messrs. E. A. Roome and Co., contractors, of London, E.C.

Sens Cathedral Struck by Lightning.

The principal tower of Sens Cathedral was struck by lightning recently. The cross was loosened and a stone balustrade broken, the damage done being estimated at £600.

New Tramway Depot, Birmingham.

The contract for the erection of a new tramway depot at Sparkbrook, Birmingham, for the city council, has been secured by Mr. T. Johnson, of Birmingham, at £21,847. The architects are Messrs. Arthur Harrison and G. B. Cox, of Birmingham.

New Cement Works.

The Ship Canal Cement Works, with a capacity of over a thousand barrels a day, is about to be opened at Ellesmere Port. The company is an English one with English capital only, but the process selected is American. Llandudno and Nottingham will furnish the supplies.

A Patent Screw-Down Tap.

We are informed that Mr. Francis E. Owen, of 16, King's Road, Romford, has secured an order from a foreign water company for 500 of his patent brass syphon taps (described and illustrated on page 237 of our issue for August 28th), making the total number supplied up to the present early 6,000.

Change of Address.

We are asked to announce that the head office of the Saxon Portland Cement Company branch of the British Portland Cement Manufacturers, Ltd., will be at 1, Lloyds Avenue, Fenchurch Street, London, E.C., and that all communications should now be sent to that address. Telephone, 6405 Avenue; telegrams, "Britporcem," London.

A Catalogue of Engineering Books.

All who are interested in the recent development of the engineering and metallurgical sciences should note that Messrs. Grafton and Co., of 69, Great Russell Street, W.C., are publishing a full title catalogue, arranged under subject headings, of all British and American books on engineering, metallurgy, and allied topics published during the five years 1907-1911, with their English and American prices and publishers' names. The work has been compiled by Mr. R. A. Peattie, librarian of the Technical Library of the St. Bride Foundation.

Royal Photographic Society's Exhibition.

The annual exhibition of the Royal Photographic Society is now open (till

September 21st) at the galleries of the Royal Society of British Artists in Suffolk Street, Pall Mall. Between six and seven hundred photographs are hung.

Proposed Building Trades Exhibition at Glasgow.

Negotiations are going on between the Glasgow and West of Scotland Building Trades Employers' Council and the International Building Trades Exhibition Company with regard to a proposal to hold a building trades exhibition in Glasgow next year.

A Blake Museum for London.

The Blake Society, which now consists of seventy members, with Sir W. B. Richmond as president, is very desirous of establishing a Blake Museum in London—a museum that would contain not merely relics of Blake, but a good Blake library and as many well-coloured copies as possible of Blake's pictures.

Bishopsgate Watch House.

The Old Watch House in Bishopsgate is about to be rebuilt. Mr. A. E. Pridmore has designed for the leaseholders, Messrs. W. H. Yerbury and Son, tobacco merchants, a new building, which follows very closely on the lines of the old, thereby preserving the appearance of the corner of St. Botolph's Churchyard, where it is situated. The builders are Messrs. Dalton and Son.

Old Furniture at the Mansion House.

During the alterations now being made at the Mansion House many valuable pieces of furniture have been found, including fine specimens of Sheraton and Chippendale, some in parts of the house where one would least expect them. In the jailer's room, beneath the police court, are a Sheraton armchair and Chippendale writing table of the period 1790, the latter being used as a dining table. One of the most interesting "finds" is a mahogany Chippendale serpentine chest of drawers in the porter's lodge. It dates from 1760, and is in good preservation. In the porter's lodge also are three Sheraton mahogany "lyre-back" chairs which originally formed part of a set of eight, and in 1803 belonged to the Venetian Parlour. It is understood that the corporation will be asked to vote £300 for necessary repairs.

Engineering and Æsthetics.

In his address to the Engineering Section of the British Association last week, Professor Barr criticised the engineering profession for its disregard of artistic merit in its designs. He made a vigorous protest against the use of incongruous ornamental features, and argued that the works of the engineer should be beautiful, not beautified. The attainment of the highest efficiency brought with it the greatest artistic merit. From the racing yacht the designer had been forced, by the demand for efficiency, to cast off every weight and the adornments that so beset the craft of earlier times, with the result that there were left only a beautifully modelled hull, plain mast, and broad sweeps of canvas, and it was hardly possible to imagine any more beautiful or graceful product of the constructive arts. As regards construction in steel, the best results could only be attained by a designer who had a thorough scientific and technical knowledge of the properties of steel and its processes of manipulation on the one hand, and cultured artistic sense and capacity on the other. These should not be considered as appropriate equipments for separate professions.

Second-Hand Books on Architecture and Building.

Owing to increase in business, Messrs. W. and G. Foyle have found it necessary to take larger premises at 121-123, Charing Cross Road, London, W.C., where they have "undoubtedly the largest and most unique second-hand bookshop in the United Kingdom," there being more than 1,000,000 volumes arranged in classified order on the six floors of the building. Readers are invited to call and inspect this huge stock, which includes a large number of books on architecture, building, surveying, etc.

Architectural Interests in Vancouver.

We have received for notice a copy of the first number of "The Architect, Builder, and Engineer," which is to be published twice a month by the Record Publishing Co., Vancouver, B.C. It is edited by Mr. H. A. R. Macdonald, and, so far as can be judged at such a distance, he seems to have produced precisely the right kind of periodical for Western Canada. The first issue announces the formation of the British Columbia Architectural Society, and adds a comment that seems to show the present position of the profession in that province: "Legislation for the benefit of architects in British Columbia is an absolute necessity. There should be (to illustrate) certain rules and regulations governing competitive drawings, particularly with respect to public buildings. It may be advantageous, too, to insist upon certain qualifications for the practice of architecture in this province that precaution may be taken against incompetents. A uniform agreement between architect and owner, whereby the financial responsibility of the latter is clearly defined by law for the protection of architects in the preparation of preliminary sketches, etc., is another point within reach by means of legislation resulting from concerted action."

Cross-Ventilated Lobbies in Hospital Buildings.

It has become a sort of gospel, says the "Hospital," that the sanitary offices must be separated from the wards by cross-ventilated lobbies, and undoubtedly it is most undesirable that the sanitary offices should be entered from the ward direct. The question, however, of the necessity for cross-ventilated lobbies is one that may well be reconsidered in the light of modern experience. "At the time that these were first devised, sanitary appliances and the whole science of plumbing were in a very backward state. This is not the case now, and we are strongly inclined to think that with modern sanitary appliances and modern skill in ventilating drains the necessity for such rigid rules of disconnection no longer exists; and this opinion is moreover very strongly borne out by the fact that in many hospitals it is the custom to fasten the lobby doors open, so that they become practically of no avail."

"Ozonair" at the Hardware Trade Exhibition.

Messrs. Ozonair, Ltd., of 96, Victoria Street, Westminster, are showing at stands Nos. 101 and 102, at the Hardware Trade Exhibition, which is now being held at Olympia (September 7th to 17th), a selection of their Ozonair apparatus for purifying and freshening the air in living-rooms, offices, shops, theatres, hospitals, etc., by destroying the organic matter, smoke, fog, unpleasant odours, and other things which tend to contamination. Ozone is also employed for the purification and sterilisation of drinking water



THE OLD CROSS INN, RYTON-ON-TYNE. MARSHALL AND TWEEDY, ARCHITECTS.

supplies, whilst its industrial applications are very numerous. The apparatus exhibited are examples of the principal portable types of ozone generators made by the company. An important feature of the apparatus is that in producing ozone, no nitrous oxides are formed and consequently there is no liability to harmful effects. Small machines are also exhibited which are more especially adapted for fixing permanently on to the wall; these are intended for use in shops, restaurants, smoking rooms, lavatories, passages, small refrigerating stores, etc. Larger apparatus is also on view. These have been designed for use in public halls, factories, schools, markets, etc. The amount of air can be regulated at will.

OBITUARY.

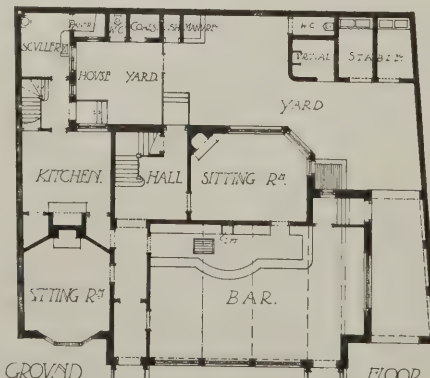
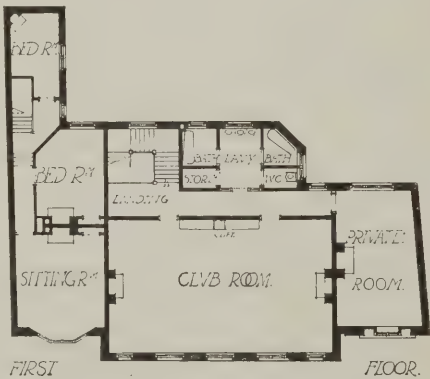
Mr. John T. Bressey, F.R.I.B.A.
Mr. John T. Bressey, F.R.I.B.A., of Wanstead, whose death was recently announced, had a large practice in the City as an architect and surveyor for nearly half a century, latterly in partnership with his son, Mr. C. H. Bressey. In addition to the Council buildings at Wanstead, he was responsible for Holy Trinity Church, Harrow Green, St. Gabriel's Church, Walthamstow, and the spire of Christ's Church, Wanstead. Mr. Bressey was in his sixty-ninth year.

Mr. Evan Griffiths.
Mr. Evan Griffiths, of 8, Fitzalan Place, Cardiff, builder, who died on August 28th last, left estate of the gross value of £2,419 10s. 10d.

Mr. J. Baker.
The death has occurred, in London, at the age of sixty-five, of Mr. John Barker, who had acquired a considerable reputation as an ecclesiastical carver. His work is to be seen at St. Albans, at Armagh, Belfast, Dublin, Ripon, Selby, Southwark, and elsewhere; and for about twenty years he had been working at Beverley Minster, both inside and outside.

THE OLD CROSS INN, RYTON-ON-TYNE.

The Old Cross Inn, Ryton-on-Tyne, has recently been rebuilt as shown by the accompanying drawing. The roofs are covered with Perfecta red tiles. The gables and walls down to the base course are finished in stucco, pebble-dashed. The base is of Lumley red brick. The contractor for the whole was Mr. W. H. Ayton; the architects being Messrs. Marshall and Tweedy, of Newcastle-on-Tyne.



THE OLD CROSS INN, RYTON-ON-TYNE.

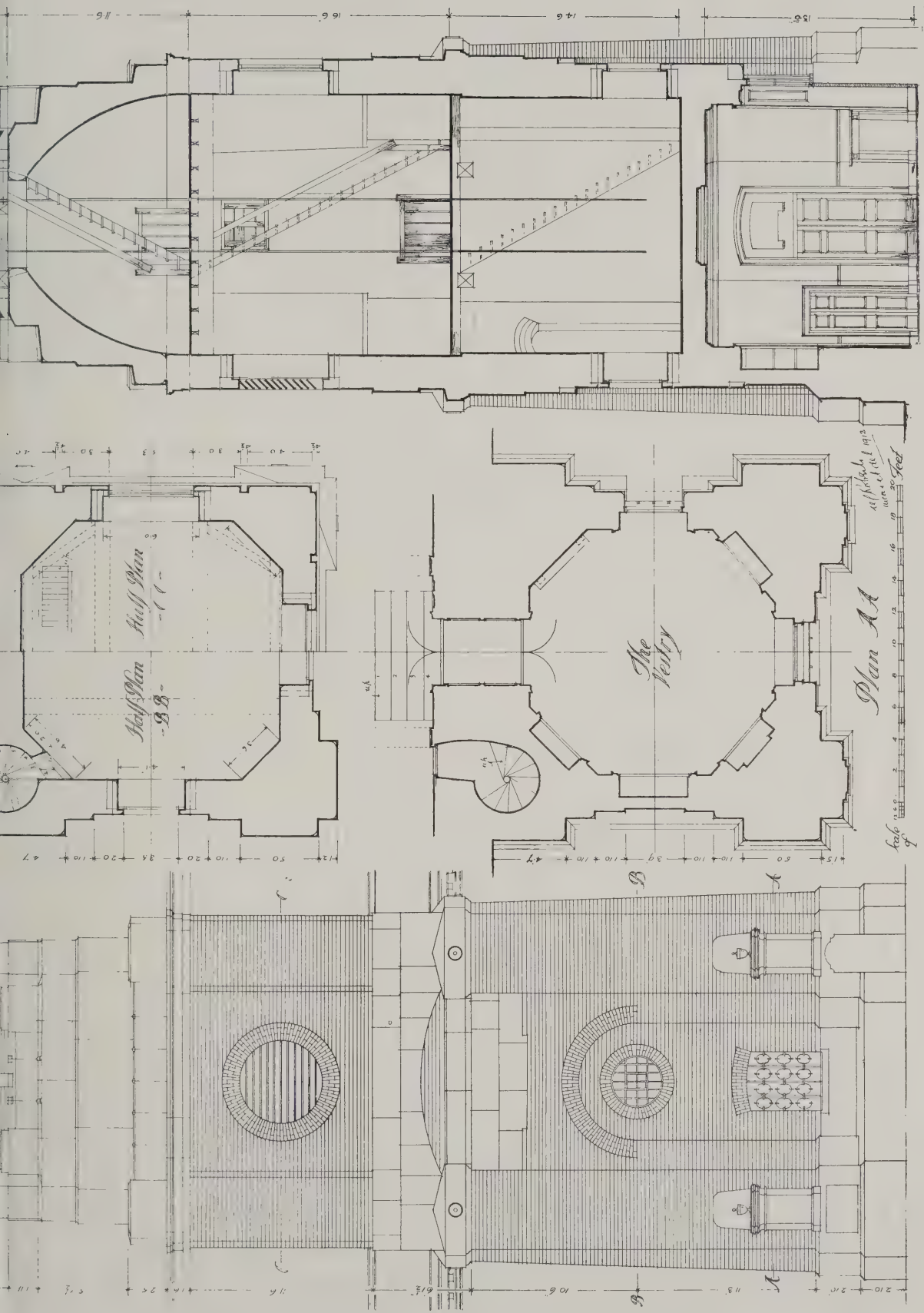
THE ARCHITECTURE OF BATH.

The Bristol Society of Architects paid a visit to Bath on August 31st, and were conducted over the city by Mr. Mowbray A. Green, F.R.I.B.A. Among the places seen were Ralph Allen's town house, Queen Square, Gay Street, the Circus, and the Parades—all these the work of the elder John Wood; the Crescent and the Assembly Rooms, by the younger Wood; Pulteney Bridge, by Robert Adam; Beau Nash house, by Thomas Greenway; the Guildhall, Bath Street, the Cross Bath, the Pump Room Colonnade, and the façade of the King's Bath—all by Thomas Baldwin; the fine group of houses in Milsom Street, formerly known as Somersetshire Buildings; John Strahan's work in Kingsmead Square and the surrounding parts, and the seventeenth-century Abbey Church House, with its recent restoration. A trip was also made to Combe Down, and so to Prior Park—John Wood's chief work—and thence through the grounds to the Palladian Bridge, returning to the city by way of Old Widcombe Manor House, the reputed work of Thomas Greenway.

ARTESIAN WELLS IN LONDON.

Like many other building owners in London, the Australian Government have decided to equip their new premises at the eastern end of the Aldwych island with an independent water supply. The chalk strata have just been reached in the boring for the artesian well. Overlying the chalk in the London Basin are, in ascending order, the Thanet sands, Woolwich and Reading beds, London clay, and surface gravels and clay, although the full sequence is not found in all parts of the area. The boring in Aldwych, which is being carried out by Messrs. Duke and Ockenden, Ltd., will probably be continued to a depth of 450 ft. from the surface before the requisite inflow of water is secured.

Writing to the "Times" on this subject, Mr. W. Vaux Graham points out that for years past there have existed in London a large number of artesian wells, many of which, but by no means all, have yielded a satisfactory supply of water. Since the establishment of the Metropolitan Water Board this number has been very largely increased, and there are the strongest possible indications that the draught upon these wells is becoming greater than the chalk will supply. In the early days of the artesian well in the London basin the water overflowed at the surface. So far is this from being the case at the present time that the standing level of the water is a considerable depth below the top of the chalk, or from 200 ft. to 300 ft. from the surface of the ground, according to the position of the well. It has long been known that the chalk under London is replenished from the outcrop at a much slower rate than the water has been withdrawn. Before the recent increase in the number of wells the standing level of the water was falling at the rate of about 1 ft. a year, and it is now going down at a greatly accelerated rate. When it is remembered that the water beneath London is standing a great many feet below sea level, it is evident that as the draught upon it increases there will arise a danger of brackish water from the Thames finding its way into the wells. "In my judgment, a rude awakening awaits those who believe that an unlimited supply of pure water can be permanently obtained from the chalk under London."



MEASURED AND DRAWN BY W. J. ROBERTS, M.A., A.R.I.B.A.

THE ARCHITECTS' & BUILDERS' JOURNAL.

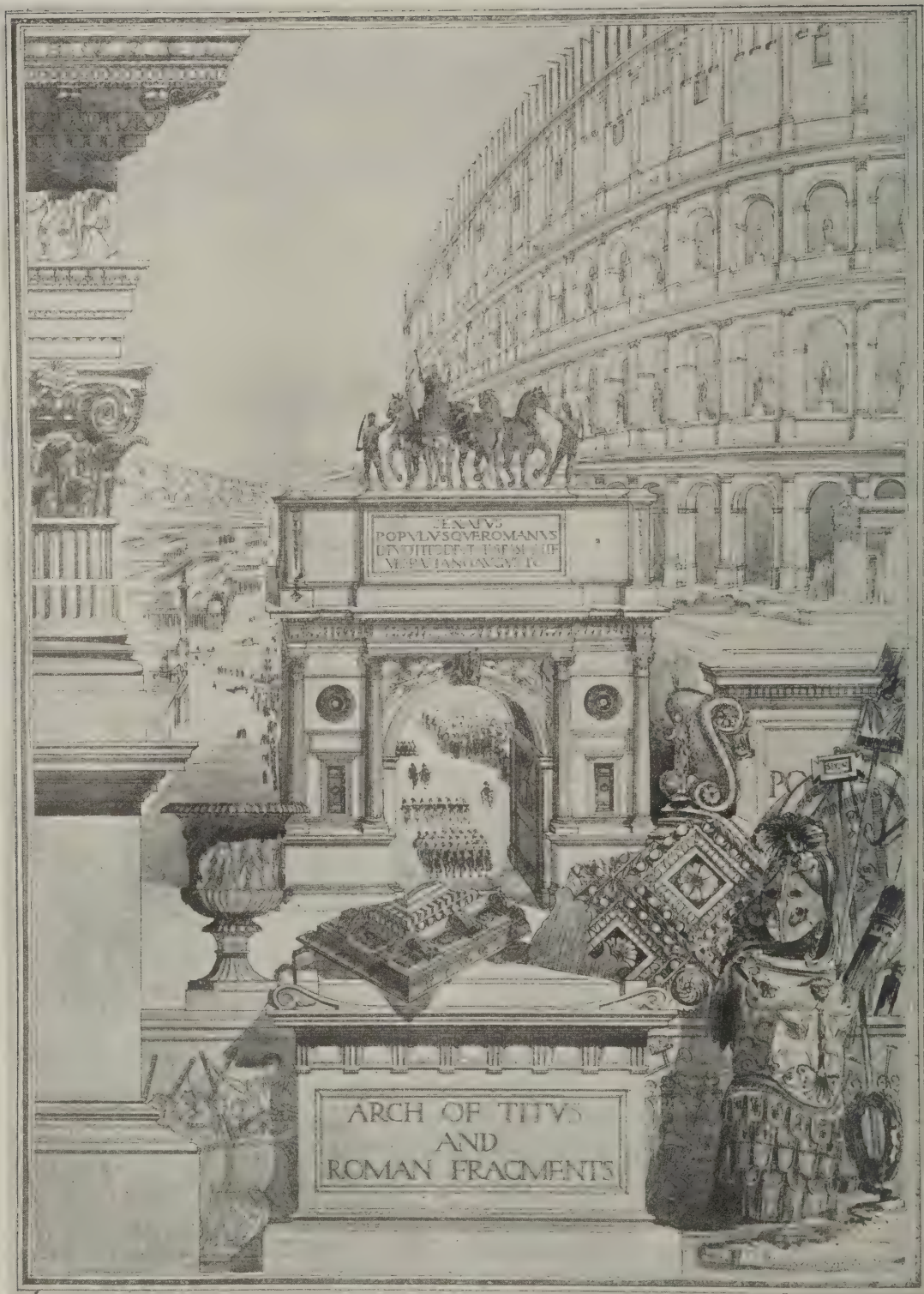
WEDNESDAY,
SEPTEMBER 18th, 1912.

Volume XXXVI.

No. 922.



R.I.B.A. PROBLEMS IN DESIGN : TESTIMONY OF STUDY FOR FINAL DESIGN SUBJECT No. 3.
SKETCH PERSPECTIVE OF BALLROOM, BY H. C. BRADSHAW (LIVERPOOL SCHOOL OF
ARCHITECTURE).



COMPOSITION IN THE ORDERS, BY H. C. BRADSHAW (LIVERPOOL SCHOOL OF ARCHITECTURE).

THE ARCHITECTS' & BUILDERS' JOURNAL.

SEPTEMBER 18th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 922.

The Cost of Isolation Hospitals.

A REPORT upon the cost of construction of isolation hospitals, which Dr. H. Franklin Parsons has presented to the Local Government Board, summarises the results of an inquiry which the doctor made at the Board's request, and embodies much useful information. The inquiry was instituted with the object of discovering the reasonableness or otherwise of complaints received by the Board as to the large and increasing cost of isolation hospitals; and Dr. Parsons was expected to furnish examples of economically constructed and equipped hospitals, to which local authorities might be referred when the proposals they brought forward appeared to be too costly. Dr. Parsons, it would seem, has had to do single-handed, with respect to isolation hospitals, what a committee was appointed to do with respect to schools—that is, to find out to what extent construction could be cheapened. He seems to have done his work remarkably well, although it will not be overlooked that the conclusions arrived at in a one-man inquiry are likely to be regarded as being more personal, and hence more debatable, than the findings of a committee. At the outset Dr. Parsons points out the fallacy of comparisons of cost made upon the basis of the bed unit, a small hospital costing more per bed than a large hospital, because in the smaller hospital the cost of site, administrative buildings, equipment, and of several other items, does not diminish proportionately. Nor can a practical comparison be made between temporary and permanent buildings unless the cost of site, foundations, fencing, water supply, and drainage, furniture, and other requisites, is included; and these details may actually amount to more than the cost of the small or the temporary building itself. Dr. Parsons's chief suggestions for keeping down costs are: The combination of small districts into suitable areas of sufficient size, so that a district may be served by one large hospital rather than by several small ones; careful selection and judicious purchase of site; the employment of a competent architect; the avoidance of superfluities and unnecessary ornament; careful supervision over the progress of erection; and reduction of the space in some instances to 1,872 cubic feet for each patient. Ordinary common-sense, one would have thought, had already established most of these conclusions; but there are extraordinary numbers of people—and in particular a large proportion of those finding their way on to building committees—who will not accept common-sense unless it bears the seal of official sanction. Nevertheless, there are at least three of the doctor's suggestions that are pretty sure to give rise to controversy. "The avoidance of superfluities and unnecessary ornament" is an expression that, while it may be perfectly justifiable in itself, may be too easily construed into a sanction of bald ugliness. It is very true that superfluities should be treated as such, and discarded, and that "unnecessary ornament," being unnecessary, is therefore inimical to art, and a good architect will have none of it; but the interpretation of those phrases is the beginning of strife. A hospital, of all buildings, should be comely and comfort-

able, if it is to have the fully curative influence which is rightly demanded of it. Its exterior should not be so depressingly plain as to make the passer-by sick at the sight of it; nor should its interior be so joyless as to discount, even fractionally, the inmate's chances of recovery. That is the first debatable point in the doctor's suggestions. The next is his reference to site. There is no disputing the truth of his observation, or the need for laying stress on it. The misfortune is that building committees usually do not know how to choose a site, yet never have the least doubt of their competence in what, in the fulness of their ignorance, they deem to be so simple a matter. In too many instances they first select the site and then call in the architect, thus depriving themselves of almost the most valuable advice that an architect skilled in hospital design is able to give them. Thirdly, there is the suggested reduction of cubical space. This being pre-eminently a question for medical experts, the mere architect will listen with discreet patience to what they have to say about it, although, even here, the specialist in hospital design may well claim the casting vote in a matter in which theoretical science cannot safely be allowed to say the last word. Here, as, indeed, in the whole scope of this inquiry, as well as in that with regard to schools, there is considerable danger of cutting things too fine. It is not only that economy may be too dearly bought at the expense of efficiency. If there is any tendency towards this disaster, merely æsthetic considerations will stand but a poor chance of recognition—or, rather, they are likely to receive just sufficient recognition to get them ruled out on sight. For this sudden fit of economy, of course neither Dr. Parsons nor the Local Government Board is to blame. It is the effect of an extreme rebound from lavish extravagance to pinching parsimony; but one could wish that the Local Government Board, in instituting such inquiries, had made it more clear that what is desirable is an absolute avoidance of both these vices. Dr. Parsons does not think that the system of inviting competitive designs is applicable to the case of isolation hospitals; and, indeed, it would appear *a fortiori* from the reasons he gives in support of this opinion that the objection extends to every other kind of hospital, or to any class of building whatsoever in which highly specialised knowledge of particular requirements is of vastly more importance than an agreeable elevation. With this contention few will venture to quarrel; for even the most extreme adherents of the competition system would hesitate to claim that it is of universal validity. Moreover, they will probably agree with Dr. Parsons that, whatever the virtues of the competition system, it certainly does not make for economy. It wastes the substance not only of the building owner—who, however, gets some sort of return for the outlay in having his pick of several designs—but also that of the architects who unsuccessfully engage in it, and whose sole reward takes chiefly the dubious form of an enlarged comprehension of their own shortcomings, as revealed in the awards of the assessor, in the Press criticisms, and perhaps in the winner's superior solution of the problems.

Mathematics and the Architect.

THE discussion, last Wednesday, in the Section of Educational Science, at the Dundee meetings of the British Association, went far to confirm the views that have been repeatedly expressed in this Journal with regard to the general failure of teachers of this subject to enlist the sympathy and draw out the talent of the average pupil. The line that several of our contributors have taken in deploring the distaste for mathematics that is notoriously prevalent among architects is that this common aversion is probably a consequence of unattractive presentation of the subject in the class-room. It seems to be a subject which peculiarly lends itself to the breaking of the bruised reed and the quenching of the smoking flax, and the pupil whose capacity for mathematics is not instantly obvious is too soon snubbed and neglected—forced into sullen aversion when a little patience and sympathy might have led him on to tolerance if not to avidity. At the meeting mentioned, Mr. T. Percy Nunn, in a paper on "The Reform of the Teaching of Trigonometry," complained—with perfect justice, we fear—that few systematic attempts have been made to reform school trigonometry in the spirit of Professor Perry's teaching. "Yet," said Mr. Nunn, "in no branch is it easier to present mathematical truths as instruments of investigation and intellectual control." Dr. W. P. Milne confessed that how to get and keep the pupil's interest amidst the discouraging difficulties of the more advanced mathematics, and how the master should keep his own knowledge fresh and thoroughly up to date, "constituted a fertile, almost untraversed, field of pedagogic inquiry." Many of the speakers urged "that mathematics should be humanised." So far as we are aware, none of them revealed the perhaps unpalatable truth that a marked talent for mathematics generally takes its fortunate possessor outside the ranks of the schoolmasters, to fields wherein he can exercise it more profitably and more congenially. A writer in these pages has expressed the opinion that the more brilliant the teacher is the less likely is he to have a full comprehension of the difficulties of the dullard, or of the average pupil. That may pass very well for paradox, but it is contradicted by certain illustrious examples, which lead one to suspect that this failure of comprehension is in reality a mark of mediocrity—a theory that fits in very well with the assumption that the best mathematicians break away from the not over-attractive environment of the school. Hence the greater need for reform in methods of teaching, in order to get out the best that is in the indifferent teacher and the reluctant pupil. Considering how much truth there is in the rough definition that "science is measurement," and considering also to how great an extent building is assuming a scientific character, demanding nicer calculations, stricter economy of forces, and a more stringent regard for "investigation and intellectual control," the interest of the architect, the builder, and the constructional engineer in the teaching of mathematics is assuming such importance as to warrant their giving closer attention to the subject than they have hitherto bestowed upon it. They should lend united support to the effort to secure a reform that so surely makes for greater efficiency in their own as well as in other professions.

The Manchester Chair of Architecture.

THE vacancy caused by the retirement of Mr. S. Henbest Capper from the Chair of Architecture in the Manchester University, owing to ill-health, has been filled by the appointment of Mr. Archibald Campbell Dickie, A.R.I.B.A., of London. Mr. Dickie, who is forty-three years of age, has had a distinguished career. Besides his work as a practising architect, including the planning of important buildings, he has acted as architect to several archaeological expeditions in Greece, Italy, and Asia Minor, and his explorations have resulted in the publication of a number of scholarly monographs. His work with the Palestine Exploration Fund is well known.

He is a member of the Committee of the Fund, to which he is also assistant secretary. For the last five years he has been a master on the staff of the Architectural Association's School of Architecture in London. The Manchester School of Architecture is conducted jointly by the University and the Education Committee. It was established in 1903 in pursuance of arrangements made between these two bodies and the Manchester Society of Architects, and the appointment is made by the University and the Education Committee.

An Irish Chair of Architecture.

THE founding of a Chair of Architecture in the National University is regarded by the "Irish Architect" as adding an important factor to the national life of Ireland. For many years several of the English universities have had their architectural schools, but in Ireland the necessary means for the thorough training of a potential architect have been hitherto lamentably deficient. The educational efforts of the few professional societies, productive as they have been in late years of much good, naturally cannot approach the value the systematic instruction obtainable at a properly equipped University. Irish architects have, therefore, laboured under considerable initial difficulties, when compared with their professional brethren elsewhere, and our contemporary declares, it speaks well for the inherent ability that they have been able more than to hold their own in competition with their more happily circumstanced colleagues.

The new School of Architecture, under the guidance of Professor Scott, should, our contemporary continues, go far to fit the student for his arduous career and fulfil those responsibilities towards the public which are his in a marked degree, and should materially help to train him in the multitudinous branches of specialised knowledge essential to the equipment of the modern qualified practitioner. No student will be granted an architectural degree without having previously served a term in an architect's office, thereby learning how to apply his theoretical acquirements in actual practice.

In order to signalise the establishment of this School of Architecture, the Royal Institute of the Architects of Ireland are convening a public meeting to be held at 8 o'clock p.m. on Tuesday, October 15, in the Lecture Theatre of the Royal Dublin Society, at which the Lord Lieutenant will be present.

Old French Churches in Danger.

CONSIDERABLE alarm is being expressed at the condition of rural church buildings throughout France—especially at Versailles, Troyes, Sens, Soissons, Saint-Brieuc, Rodez, Mende, and Corse. It is represented that the respective communes of these places are, because either of their poverty or of their apathy, allowing fine old specimens of ecclesiastical architecture to go to rack and ruin. Appeals on the subject have been made to the Government, who, however, have not yet seen fit to intervene. Doubtless, with their native love of art, they deplore the threatened decay of so many venerable and beautiful buildings; but, on the other hand, they are very keenly aware that any money advanced for the rescue of the churches would be construed as a subsidy to clericalism, and that, in the present temper of the people, would be regarded as "betrayal of the nation." If the churches could be secularised, and preserved as monuments of French art—converted into museums, and so forth—the money would no doubt be instantly forthcoming, but the Church having become intensely unpopular, there is a strong feeling that the ecclesiastics ought to keep their own house in order—and ought, in fact, to be compelled to do it—without assistance from the public funds. There is, indeed, some talk of applying for a law to compel them to do their duty by the fabrics committed

their charge; in which case their protest that they lack the funds might be met by urging them to raise the money among themselves—not, as well might be in similar circumstances in our own country, by means of a public subscription; which method of generosity is regarded by the thrifty French as being scandalously loose and unsystematic. But somehow the money must be obtained and applied; for it is simply inconceivable that art-loving people like the French will, for the sake of political pique or anti-clerical feeling, tolerate the present ruin of architectural monuments which, many of them dating from the twelfth century and earlier, are among the chief glories of their country. Presumably the Government has no power to insist that such monumental churches shall be kept in repair; but perhaps the law on the subject is still under revision; for it may be remembered that in January last, when our own Government were receiving reports from His Majesty's representatives abroad, on Continental practice with respect to the preservation of ancient monuments, Sir Francis Bertie replied from Paris that a Bill amending the legislation upon the subject had been recently laid before the Chamber of Deputies, and he therefore asked and obtained leave to postpone his report. France's near neighbour, Belgium, assumes State supervision of all monuments, religious or secular, which possess special value from an architectural or artistic point of view; and the expenses incurred in the preservation of cathedral churches, episcopal residences, and other ecclesiastical buildings, are included in the annual budget of the provincial councils. Perhaps, following this example, the French Government may see its way clear not only to insist on the preservation of ecclesiastical monuments, but, as a fair and logical complement, to make provision for meeting the cost of maintenance; but even so, they would be faced with the formidable difficulty of having to deal at once with so large a number of churches that the lump sum required would probably amount to a staggering total, while the burden on each local commune would be a source of bitter complaint.

The Proposed New Building at the Guildhall.

THE design for the new building proposed to be erected on the east side of Guildhall Yard is a very good piece of architecture in itself, and would be a welcome substitute for the commonplace building now fronting on the yard; but we are not sure that it is the best kind of design for the situation. We quite agree with Sir Henry Tanner, whose opinion on the subject has been taken, that it would be a mistake to make a Gothic design, merely because of its proximity to the late and rather weak Gothic of the Guildhall (which besides is not much in evidence externally), but when he says that it would be practically impossible to adopt in the new building the mixed style of Dance's work on the gatehouse, "a curious mixture of Gothic and Oriental feeling," we should say that is only partly true. A mere imitative adoption of Dance's "curious mixture" would be a mistake, no doubt; but it would be possible to design something better than that, less incongruous, and more refined in detail, but which would repeat something of its rather picturesque character, instead of introducing a manner of architecture entirely at variance with it and with Guildhall associations. It would be an interesting experiment in architectural design, and quite worth attempting. We hardly think the proposed elevation, good as it is in itself, is exactly suitable to the situation.

Thus far we have expressed our own views. What follows is gleaned from the discussions on the project that have appeared in the daily and weekly Press. The Guildhall Yard, it is stated, has the same contour now as it had in 1411, when the Guildhall was built, and the committee's scheme will present on the east side a building line precisely similar to that which existed in the fifteenth century, and will leave untouched the present Guildhall

front. The scheme will involve the obliteration of the Irish Society's house in Guildhall Yard, and the provision of accommodation for the society in the new building. The proposed buildings on the west side would be devoted to the Guildhall Police Court and to the offices and departments of City officials.

Sir Henry Tanner, the chief architect to the Office of Works, whom the Corporation, with Lord Beauchamp's approval, consulted, agreed with the proposals in the main. He considered (according to "The Times") that it would be most unfortunate if the old Gate House was in any way interfered with. Though the design is not correct, it marks a period in the existence of the Guildhall which should be preserved, and any attempt to replace the front by any other structure would, Sir Henry is sure, meet with very great opposition from archaeologists and antiquaries. A proposal to build over Guildhall Yard would be very objectionable and detrimental. Sir Henry considers the existing buildings annexed to Guildhall unsatisfactory, obsolete, and unworthy of their position, and favours the scheme as a whole. As regards the exterior, he considers the choice of Early English Renaissance most suitable to the surroundings. The Guildhall, itself of fifteenth century Gothic, is little seen, while the Gate House, built by Dance, is a curious mixture of Gothic with Oriental feeling. As this building should be retained, and as it would certainly be practically impossible to adopt its style in the new buildings, and modern Gothic in close juxtaposition would be undesirable, ample arguments in favour of the style chosen are provided. The chief principle has been to keep the main architectural features away from the Guildhall and to emphasise the entrance, and this Sir Henry Tanner considers right. A Gothic design would, he insists, be a great mistake, very undesirable, and unsuitable. Sir Henry criticises certain details of the ornamental part of the original plans, and suggests omissions and additions which the City Surveyor (Mr. Sydney Perks, F.R.I.B.A., F.S.A.) has adopted.

There will be no difficulty in agreeing with a writer in the "City Press" that a hard task confronted Mr. Perks. The front of Guildhall, designed by Dance, is not (our contemporary points out) Gothic, as is postulated by the writers who express dissatisfaction with the suggested improvement. It may not even be called sham Gothic, although attempts are made to so describe it. The windows are hybrid. In parts they are Moorish. The pinnacles are reminiscent of Wren, and similar work is to be found on many of his churches. "Any reasoning, therefore, based upon 'a Gothic front' breaks down upon the slightest examination. To put up good Gothic would destroy the effect of Dance's front. Architecturally such a suggestion is impossible. Moreover, the use to which the buildings are to be put must be considered. The dominating factor is the picture gallery. A Gothic picture gallery is impossible. The pitch roof and front lighting are unsuitable. A picture gallery must be lighted by an elliptic or round roof. There can be no windows on the front elevation. If a picture gallery is to be provided, therefore, the Gothic design would have to go, anyhow. Nor could the two sides of Guildhall Yard be out of harmony. The facts of the case therefore presented but one answer—Renaissance, for it is manifestly impossible to repeat Dance's work."

This is said to be virtually the official answer to the criticisms, and the "City Press," from which it is taken, adds somewhat confidently the bland assurance "that the views of those entitled to speak with authority must, and indeed will, receive proper consideration."

We hardly share this confidence. Experience of the manner in which the City Corporation received the earnest advice of the Royal Institute of British Architects with respect to the St. Paul's Bridge scheme is too recent to warrant any very robust belief that a complete change has so soon come over the spirit of the Corporation. If they are really sincere in their desire to act upon authoritative advice they know quite well in what direction to look for it.

THE HOTEL BIRON, PARIS.

THE fine building which was called successively, after the names of its owners, the Hotel de Moras, du Maine, de Biron, de Béthune-Charost, during the eighteenth century, and was known subsequently as the Maison du Sacré-Cœur when used as a convent during the nineteenth century, has now been acquired by the French Government for the sum of £320,000. To what purpose it will eventually be devoted is not yet settled. It may become a new headquarters for the Ministry of Justice, a public institute, or, more probable still, a musée of the period of its greatest fame—just prior to the outbreak of the Revolution of 1792.

Until the recent long-drawn-out controversy over its sale, the Hotel Biron—its present title—was a practically unknown building to people outside of Paris, yet, as may be seen from the Centre Plate in this issue, it is a most interesting example of architecture.

The building is situated at the angle of the Rue de Varenne and the Boulevard des Invalides, the dome of the latter being visible through the trees in the garden behind the house. It lies, therefore, in the very heart of the once famous Faubourg Saint-Germain, almost facing the Pont Alexandre III.

As seen to-day, the mansion and its immense gardens—once the pride and wonder of all Paris—are in a state of chaos and neglect, the tenants since the expulsion of the nuns under the Associations Law in 1904 having all been recently ejected, with the solitary exception of M. Rodin, who has been permitted for the time being to retain his two magnificent studios on the first floor.

The estate in all covers about 12½ acres, and comprises four buildings in addition to the gardens. Three of these buildings may be dismissed in a few sentences. One

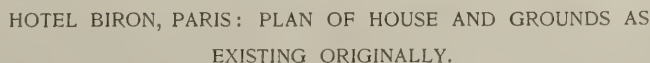
is a large and most unsightly chapel, next to the entrance on the right, which at once spoils the beauty and symmetry of the forecourt. Its presence there is due to the wholesale vandalism committed by the Dames of the Sacré Cœur and their priests, who seem to have made a point of destroying as much as they could of the beauty and architectural charm of the place during the long period of their residence there. Then there is a smaller chapel erected in 1823, now practically in ruins; and at the bottom of the garden is the large private residence of the Lady Superior, erected by the first Mother, Mme Madeleine Sophie Louise Barat, in 1858, which in its turn spoils the appearance of that end of the garden.

Happily, however, the splendid main building of Gabriel père, Royal Architect to Louis XV., is still intact in its main outlines. It was built for M. Perrin du Moras in 1728-30, the work having been carried out under the superintendence of M. Léon Aubert. Hideous red brick chimneys defile its roof to-day; but these will be removed, as well as such other anachronisms as the *vacherie* in the garden.

Like most of the noble houses of its period, the main building is approached by a spacious forecourt, or *cour d'honneur*, leading direct from the entrance to a flight of steps in the central pavilion of the house. To the right and left of the entrance there were originally a number of inner, or *basse*, courts; those on the right provided stables for thirty-three horses and eight coach-houses, and led to the great kitchens of the establishment. These were purposely separated from the main building so as not to offend the olfactory nerves of the aristocrats who were frequent guests at the mansion. They were, however, connected with the basement by a series of passages which in turn led by a special staircase to the grand *salle à-manger* and other parts of the ground floor. The



HOTEL BIRON, PARIS: ENTRANCE FRONT.



On entering the house the first feeling is one of disappointment at the apparent smallness of the grand vestibule, of which the chroniclers make so much. But this

To the visitor in search of fine architecture, however, the large rooms of the first and ground floors are the real *but*. Here Gabriel produced his finest work. For particulars of the original embellishments of the rooms we have to turn again to Blondel, who, after recording

his approval of the noble proportions of the two floors, goes on to speak of the ornamentation, the exquisite mural carvings and superb mirrors, all of which have been removed by the convent authorities. These, says Blondel, combine to make the Hotel Biron "one of the most perfect specimens of French classical architecture of our day." He is equally warm in his appreciation of the taste and judgment displayed by Gabriel in laying out the immense garden, with its parterres, shady nooks, etc. The garden, however, is at present in a shocking state of neglect, but will be put into proper order in the near future and thrown open to the public when the restoration is complete. Some idea of the original extent of the flower garden may be gained from the fact that when the building was in the occupation of the famous Duc de Biron, Marshal of France, £8,000 worth of tulips were grown at one time, while the produce of the kitchen-garden was so great that it supplied half the markets of Paris with its fruit and vegetables! Here were planted some of the first peaches, apricots, and nectarines when they came to Europe. Indeed, M. F. d'Andigné, in his report to the Commission Municipale du Vieux Paris, tells us that the Duc de Biron employed no fewer than eighty gardeners, many of whom made fortunes and retired comfortably into private life.

ENGINEERING AND ÆSTHETICS.

IN his address as President of the Engineering Section of the Congress of the British Association at Dundee, Professor Barr touched upon the vexed question of artistic design in engineering. In particular, he made at the outset of his observations a very welcome acknowledgment of the value of æsthetics. There were, he said, injuries which engineers might inflict upon the community other than those to health and physical comfort. Every one, even the least cultured, had some sense of the beautiful and the comely, and was affected by the aspects of his environment more than he himself could realise. The engineer, then, whose works needlessly offended even the most fastidious taste, was acting contrary to the spirit of his profession at its best. There had been far too great a disregard of æsthetic considerations in the everyday work of the engineer, who usually took a too exclusively utilitarian view of his calling.

A greater regard for artistic merit would not necessarily lead to extravagance, but in many cases would conduce to economy and efficiency. There was, or ought to be, a closer connection than was usually recognised between the work of the engineer and that of those to whom was usually restricted the title of artist. There was no great gulf fixed between the fine arts and the utilitarian arts in earlier times. Such men as Michelangelo, Raphael, and Leonardo da Vinci might be claimed as masters in the arts of construction as well as in those with which their names were usually associated. The separation of the beautiful and the useful was quite a modern vice.

There was an old maxim to the effect that the designer should ornament his construction and not construct his ornament. This was an admirable rule so far as it went, but it should be subordinated to a higher rule, that he should ornament his structure only if he lacked the skill to make it beautiful in itself. A structure of any kind that was intended to serve a useful end should have the beauty of appropriateness for the purpose it was to serve. It should tell the truth, and nothing but the truth, and if its character were such that it could be permitted to tell the whole truth, so much the better. It should be beautiful and not beautified. The practice of resorting to extraneous adornments to minimise crudities of structural scheme had its rise in the comparatively recent times when culture and taste were at their lowest, and it was specially characteristic not only of earlier times, but of the earlier stages of the design of any particular product. It had already disappeared in some cases, and would con-

tinue to disappear from the practice of the arts of construction as skill and taste developed.

It was constantly remarked, and with justice, that steel bridges, as a class, were much less pleasing to the eye than those of stone. The reasons for the contrast in artistic merit were not far to seek. The building of stone bridges was an ancient art, and survival of the fittest, and selection, would have led to the development of types having, of necessity, at least the elegance of fitness. But further, this art had come down through the times when artistic and utilitarian aims had not yet been divorced in the practice of the crafts; and further still, the practice of building in stone had been in the hands of architects, as well as of engineers, and architects were expected to be artists, and were trained as such. On the other hand, construction in steel was a very modern art, and it had been in the hands of engineers who usually neglected, if they did not despise, the study of the fine arts. But why had architects, with their artistic training, not succeeded in producing structures in steel as admirable as those they designed in stone? Partly, no doubt, because they were hampered by tradition, and partly—if a common engineer might venture the criticism—because, as a rule, they had not sufficiently mastered the science of construction, and had been too much addicted to taking the easy course of adopting a decorated treatment instead of striving to secure elegance of structural scheme as such; and decoration, at least on anything like traditional lines, was wholly incompatible with the best possibilities of steel as a structural material. Progress was being made in the art of designing efficient and graceful structures in metal, but the best results could only be attained by a designer who had a thorough scientific and technical knowledge of the properties of steel and the processes of its manipulation, on the one hand, and cultured artistic sense and capacity on the other.

In a subsequent letter to "The Times," Mr. W. D. Caröe offered a word of thanks to Professor Barr "for such lucid and convincing expositions of realities which touch so nearly our everyday lives." An apt reference to the unnecessary defacing of the landscape by the railway companies might, he urged, be further insisted upon in a matter which will cost them nothing to amend. "Not only," he continues, "by the painting of bridges are our eyes offended, but again and again by the garish effects produced in rural railway stations by the choice of staring colours, when sombre ones are called for. I use frequently a roadside station on the L. and S.W. Railway, which lies amid delightful woodland scenery, and is a type of many. Its iron pillars are painted a light green; its girders bright blue, and its large expanse of woodwork a light ochre picked out with umber! The harmonious and serviceable colour for all alike would be a quiet bronze green, tending to make as inconspicuous as possible the sheds, footbridges, and platform covers, which are at best never engaging objects to look upon.

"One or two other offences against seemliness may be noted. The Furness Railway has defaced much of the charming Lakeland country it serves by the conspicuous colours of its stations and Lake steamers. What is immaterial in smoky Barrow is an offence on Windermere. But that is just such a distinction as the railway engineer is blind to.

"The Great Western, while advertising the beauties of the Thames, has created an unusually hideous iron pumping station by its bridge at the head of beautiful Pangbourne Reach. Maybe the choice of that situation and even the ugly form were engineering necessities. But why emphasise the misfortune by painting the intruder a bright and conspicuous ochre, as though needlessly to give pain to those who heartily concur with the tenor of the company's alluring posters? Such an offence in such a spot should be painted out, and planted out, as soon as possible. It might, indeed, seem to be often in the commercial interests even of a railway company to study the amenities in all situations, and specially where no extra expense is involved."

THE NEW KING'S COLLEGE HOSPITAL.

TWENTY years ago a Select Committee of the House of Lords on metropolitan hospitals urged that at the first opportunity a large general hospital should be built at Camberwell, or that one of Central London's existing hospitals should be transferred there to meet the urgent needs of this densely populated district. King's College Hospital, now occupying a large building at the corner of the Law Courts, was named in this connection, and when, in 1904, a magnificent site on Denmark Hill was presented by the Hon. W. F. D. Smith, chairman of the hospital, the scheme was at once formulated. A competition was instituted, in which the leading architects took part, and the design submitted by Mr. William A. Pite, R.I.B.A., was selected.

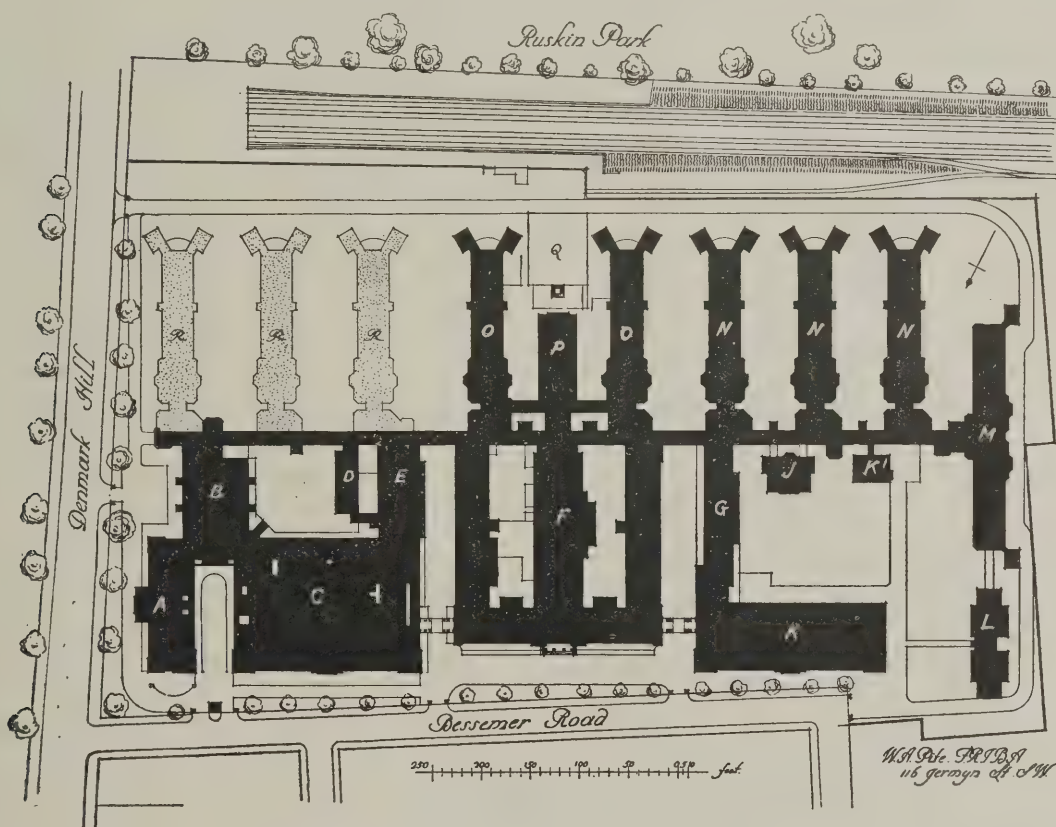
About four years ago the erection of what will undoubtedly rank among the foremost hospitals of the world was commenced, and the work is now well advanced.

site adjoining Denmark Hill; the administration block and chapel, forming the middle vertebra of the spinal corridor nearly 900 ft. in length; the almoner's department, the linen department (below the chapel), and the central station (placed below ground between the two three-storey ward blocks, to be named respectively the King Edward VII. block and King George V. block); together with the eastern portion of the main corridor forming a connecting link to Denmark Hill.

The remaining two-storey ward blocks, including the special wards, together with the operating theatre blocks and the pathological block (which includes the laboratories and mortuary), are being proceeded with, and, it is hoped, will be ready for occupation in about a year's time.

The large two-storey operating block is for surgical cases, the other for gynaecological, septic, and clinical cases. These are situated on the northern side of the western corridor, and are served by electric bed lifts.

The central feature of the outpatient department is the fine waiting hall, capable of seating 500 people, surround-



BLOCK PLAN OF THE NEW KING'S COLLEGE HOSPITAL, DENMARK HILL, LONDON, S.E.

A, casualty; B, bathing and electrical; C, out-patients; D, almoner; E, dispensary; F, administration; G, pathological; H, large operating theatre; I, medical school; J, small operating theatre; K, isolation; L, special wards (ear, eye, and throat); M, ward blocks; N, King Edward and King George ward blocks (3-story); O, chapel, with linen department in basement; P, central station, at low level; Q, future ward blocks.

The official stone-laying ceremony was performed by King Edward VII. on July 20th, 1909, and was the last public action of the kind before his lamented death.

Spread over an area of some twelve acres overlooking Ruskin Park—perhaps one of the most beautiful parks in London—the buildings offer a delightful grouping of mass and well-studied colour in this somewhat gloomy and depressing district.

The scheme at present being carried out makes provision for 320 beds (100 more than in the existing hospital at Lincoln's Inn), contained in twelve wards and four special wards, which accommodation will, in the future, be enlarged to provide 600 beds.

The portions which have been practically completed include the outpatient and casualty blocks and the bathing department—situated at the north-east corner of the

ing which are the various consulting rooms, etc. The dispensary is so placed that patients, after being served and attended to in the almoner's department, may depart direct to the Bessemer Road exit.

In the administration block the secretary's and matron's offices are provided, with accommodation also for the resident medical officers, etc., while the upper stories are entirely devoted to the nurses' home. Provision is also made here for the servants' bedrooms.

An interesting feature will be the isolation block, situated in the north-west corner of the site. It provides accommodation for twelve patients in cubicles, and is a specially licensed structure under the London County Council, built of hollow blocks with steel columns supporting the roofs. The cubicles are placed on either side of a low central corridor cross-ventilated in a manner similar

*Photo: Architects' and Builders' Journal.*

THE NEW KING'S COLLEGE HOSPITAL: VIEW LOOKING DOWN ON OUTPATIENT BLOCK, SHOWING VENTILATION DUCTS, ETC.

to the twenty-four-hour wards over the casualty block; they originated in Paris at the Pasteur Institute.

The central station is situated in the centre of the site. Diesel engines will drive the dynamos for generating the electricity. The heating is by low-pressure steam.

Special mention should be made of the ward blocks, although it is impossible to describe them adequately in

detail within the short space at our disposal. It is hoped that they will contribute in no small measure to the attainment of an ideal. No pains have been spared in planning them to provide for the many special and technical requirements of a building with such highly scientific needs.

The wards are placed at the hill top in a long stately row, having ample sun balconies at their southern extremities overlooking Ruskin Park.

The medical school, to the west of the administration block, and in proximity to the pathological department, will include library, museum, lecture theatre, private work-rooms, and students' quarters.

Externally the hospital is decidedly imposing. A great effort has been made to secure that quiet and dignified effect which is so essential to a building of this character, while at the same time, by a studied choice of good materials built in a sympathetic manner, this desirable result has been attained without extravagance in treatment or needless cost. The north elevation is dominated by the central administration block, flanked on either side by the lower buildings of the outpatient department and the medical school, but separated by courtyards; the several blocks, however, being connected by stone colonnades which mask the less important buildings behind.

Portland stone and stock brickwork with red dressings are the materials used.

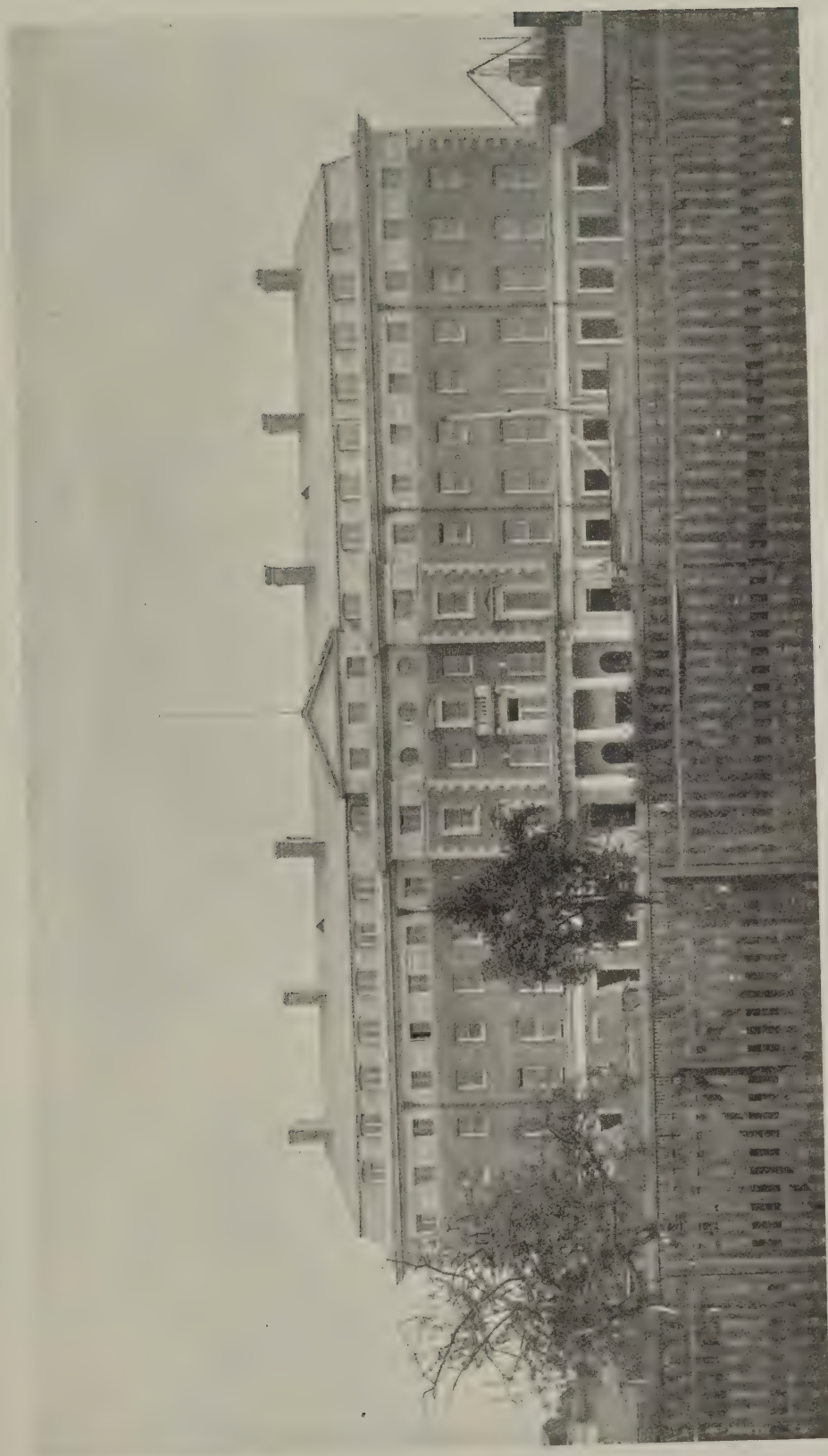
Seen from Ruskin Park, the picture is a very pleasant one, as from this view-point one sees the long range of ward blocks, with their flanking annexes and the octagonal tank-houses on the two central three-storey blocks, roofed with Italian tiles, against a background formed by the main corridor and the roofs of the administration block.

As an example of a really fine architectural composition arising from the purely utilitarian purposes and disciplined disposition of modern hospital requirements, it must be considered wholly satisfactory. A broad simplicity of treatment is the keynote throughout inside, without moulded work or ornament of any kind.

The contractors are Messrs. Foster and Dicksee, Limited, of Rugby.

*Photo: Architects' and Builders' Journal.*

THE NEW KING'S COLLEGE HOSPITAL: DETAIL OF MAIN ENTRANCE TO ADMINISTRATION BLOCK.



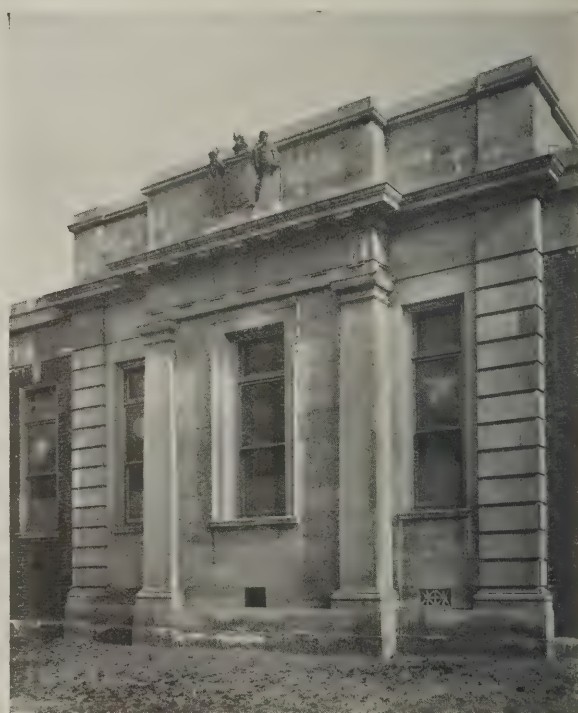
THE NEW KING'S COLLEGE HOSPITAL, DENMARK HILL, LONDON, S.E.: GENERAL VIEW OF ADMINISTRATIVE BLOCK.
WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.



General View of Works in Progress, showing Tank House.



View showing Ward Blocks in Course of Erection.



Detail Views of Outpatient Department.



Waiting Hall in Outpatient Department.



Colonnade connecting Administration Block and Outpatient Department.

HERE AND THERE.

THE technical terms employed in connection with architecture and building include a large number which serve to illustrate the idiosyncrasies of the English language. Forms of speech, we are told, cannot stand still; they must move with the times. Thus it happens that spelling differs in different centuries. A glossary of building terms will display a score of words which are commonly spelt in various ways, some of them quite incorrectly. Take such a word as "by-law." More often than not it is given as "bye-law," even on Government papers, but as its derivation is from Scandinavian word "by," meaning a town, the "e" is superfluous. The Elizabethans had a liking for an "e" at the end of their words, and some of these additions will remain with us. Such, however, is not the case with "employee"—a far better word to use in English than "employé," as the first word is the complement of "employer," just as "lessor" and "lessee" are complementary terms, whereas the French word more particularly refers to a clerk. Another "e" creeps into the word "storey," presumably from its Old French derivative "storeur," to build, but the generally accepted form at the present time is "story." It is dangerous, however, to place too much reliance on the origin of a word, because there is no regularity in the changes which take place, otherwise how should "transom" (also spelt frequently with an "e") have been metamorphosed from its Latin derivative "transtrum," a cross-beam? Then the letter "s" has its omissions and substitutions. More often than not in specifications we use the word "cill," but, if we go by derivation at all, "sill" is the more correct form when we take into account the Anglo-Saxon "syll," a base. And why should "fascia" be deprived of its "s"? But these are simple variants compared with such an array as "bressomer," "bressummer," "brestsummer," and "breast-summer." The second I take to be the form usually accepted, but the last word more completely expresses the meaning, though few of us remember that "summer" is a lintel as well as a term for a mythical warm season in England. Confusion worse confounded meets us in "rabbet" and "rebate," though this would appear to be one of those cases where illiterate spelling in the first instance has been repeated till the term becomes adopted as common usage: there is no question, however, that "rabbet" is the proper way of spelling the word, the derivative of which is "raboter," to plane—i.e., prefix "re," again, and "aboutier," the English which is "abut." A pleasant alternation of vowels appears in such words as "ashlar" and "ashler," "lintel" and "lintol," "spandrel" and "spandril," but the first form in each of these three cases is the correct one. "Coign" for "quoin" persists, in spite of its irregularity, and we are reduced to utter perplexity when English, Scotch, and Irish terms are interchanged, so that, if in Scotland, we have to call an apron a "berge," and if in Ireland we must speak of the "rere" of a building when we mean the back elevation. But no word used in connection with building could be more confused than "Brahma," the name commonly given to a special form of lock. One might reasonably infer it had an Indian origin, but the fact is that this lock was invented by a Mr. Bramah, whose sojourn in Brixton is perpetuated by the road in which he lived being called after him.

In the issue of this journal for August 28th I made some remarks on the shortcomings of Free Church architecture. No doubt there are various opinions on this as on all other subjects. One correspondent sends me a quite unintelligible letter, which reads like a short treatise on the tenets of Nonconformity, but I purposely abstained from touching at any aspect of the subject, which would be totally foreign to these columns. Another correspondent, however, Mr.

George Reavell, A.R.I.B.A., of Alnwick, expresses some views which may here be given. He says: "A very great deal of what you say is true. Too much show is demanded, and an architect who tries to do a little solid honest building with a reliance for effect on proportion and fitness has to do a good deal of arguing with his committees. You are doubtless right in pointing out that the problem differs from the Anglican structure, the ritual being so entirely different; but has it struck you that if an architect of great repute outside the Free Churches is called in he seldom tackles that problem and gives a lead? Recently at one of our best-known garden suburbs an architect of undoubted ability and standing has designed a Nonconformist church in which he has placed exaggerated columns at the sides of the naves, blocking the view of the pulpit from very many seats, and right behind the pulpit he has set a window which will make a distressing background for those who try to face the pulpit during a thirty or forty minutes' sermon. The window might be blocked up with no great harm to the design, but take away the pillars and the whole conception needs to be altered. A picturesque grouping has been achieved, but at the cost of a complete evasion of the chief point of the problem." The architect referred to is, of course, Mr. Lutyens, and the building is the Free Church at Hampstead Garden Suburb. For Mr. Lutyens's work I have a very great regard; he is an architect who, in his own particular field, is unequalled for versatility of design. At the same time I do not admire everything he does, and the above criticism in regard to the church in question has, I think, a very just application.

* * * *

Very strange things may happen when a newspaper man gets hold of an architect and asks him to express an opinion on something which is in the public eye. To begin with, there is no guarantee that his name will be given correctly. I remember once seeing "Professor Beresford Pytle" in print; that was an unfortunate title for an eminent architect to be given, but an even more inglorious result was achieved by a London daily referring to a vigorous Englishman as "Signor Halsey Ricardo." And when we settle down to the technicalities of the profession we may be sure of getting some of that enlivening element which is so sadly needed in matters architectural. What more delightful, for instance, in an account of a new building than to read that it is ventilated "on the fresh-air principle"? These things recur to my mind by reading in an American paper a short interview with the successful architect in the competition for the new Federal capital of Australia. In the course of this interview Mr. Walter Burley Griffin is reported to have said: "I do not know whether I shall be called to Australia to superintend the construction of the new city. I hope so. I rather expect I shall. It would be only fair to me. There is nobody in the world who can work out my ideas like myself." To comment on that is merely to paint the lily. Let us merely express our thanks for having alive among us one surpassing genius.

* * * *

"The blight of the ugly cottage" has furnished a text on which to base a lengthy discussion, in the course of which the new cottages which intrude their blatant forms on our English countryside are anathematised. The daily press have a knack of getting hold of some sort of rubbish about architecture, and thus it happens, in the course of an interview with a Fellow of the Institute, we are told that it is just as cheap to build a "pretty" cottage as an "ugly" one. We give that word "pretty" a wide berth, for, as customarily used by ladies in drawing-rooms it stands for objects which do not stir us to admiration; but some such word we must have, and so the architect takes "jolly" unto himself. (I have heard architects call lots of things "jolly" which were nothing less than freakish.) But the point is, what is a "pretty" cottage? Here the public have some measure of right on

their side for once. Those delightful old cottages which one sees in a Sussex village, for instance, certainly make an appeal to all, and there is something about them which is other than "picturesque." The materials of which they are built contribute largely to the effect, and the tone acquired through exposure to the weather is another factor; but, after all this has been taken into account, there still remains something else; and, to my mind, it is the proportion which the old builders observed, traditionally, in the making of these cottages. You cannot alter the shape or the size of their windows with advantage, nor can you get the same effect if you blow the cottage out into a bigger house. They possess a character individual to themselves, and the only way to acquire some of the same sort of feeling in modern cottages is to base these on the old ones. The difficulty is to do so in the face of by-laws which, excellent enough in urban districts, are utterly foolish and superfluous in country districts; and with materials to use which are nothing like so good as the old builders had at their disposal. Without doubt, the architect who tries to design a "pretty" cottage to meet the needs of the labourer earning 15s. a week is confronted with a peculiarly hard problem.

UBIQUE.

THE RIGHT AND WRONG OF RESTORATION.

AS one engaged in carrying out such work, I was much interested in the leading article on restoration which appeared in the issue of THE ARCHITECTS' AND BUILDERS' JOURNAL for August 28. It seems to me that there is an immense field for the activities of the Society for the Preservation of Ancient Buildings, and, if they choose to labour therein, they may remove many difficulties that at present beset their path. But, while offering my tribute to the good work they are doing in saving from destruction many ancient buildings which we could ill spare, I nevertheless agree with the writer of the previous article that their attitude towards old buildings that are obviously in dire need of repair is often absurd. For instance, their horror of using stone to repair stonework is based on the confusion of two ideas. Now, notwithstanding the testimony of some perspective drawings, a thing cannot be regarded from two different standpoints at the same time. Yet the society attempt to consider restoration from the standpoint of the architect or archæologist and also at the same time from the standpoint of the mere spectator or "man in the street."

One is the view of the expert, the other of the layman. An architect may find on a cathedral a restored part, and at once puts it down as modern work—a replacement of stonework which has decayed or been destroyed. He is not deceived by it, except momentarily, for modern work can always be recognised. On the other hand, the man in the street, who the society is so afraid may be deceived, does not know the old work from the new, unless, indeed, the latter be glaringly new. Why look at things at all from his standpoint? If we do, then we may be sure that our care in his behalf is entirely wasted, and that the efforts we may make will only increase his misunderstanding of the whole question. As an instance, if the restorer, in repairing a decayed mullion, cuts away the outer half to the glass line and rebuilds it in bits of tile and lias lime, then an architect seeing this knows at once that this has been done so as not to introduce any new stone; but the man in the street, when he does notice it, thinks it a mere deception, a cheap way of making it look like the old stonework. Or, again, all the exterior stonework of, say, a village church, is treated with baryta water. As that solution dries white, colouring matter is perhaps added, producing from top to bottom of the church an arrogant and eye-arresting khaki-washed effect. The result is that the villagers regard the restoration as an attempt "to make t'owd church look new."

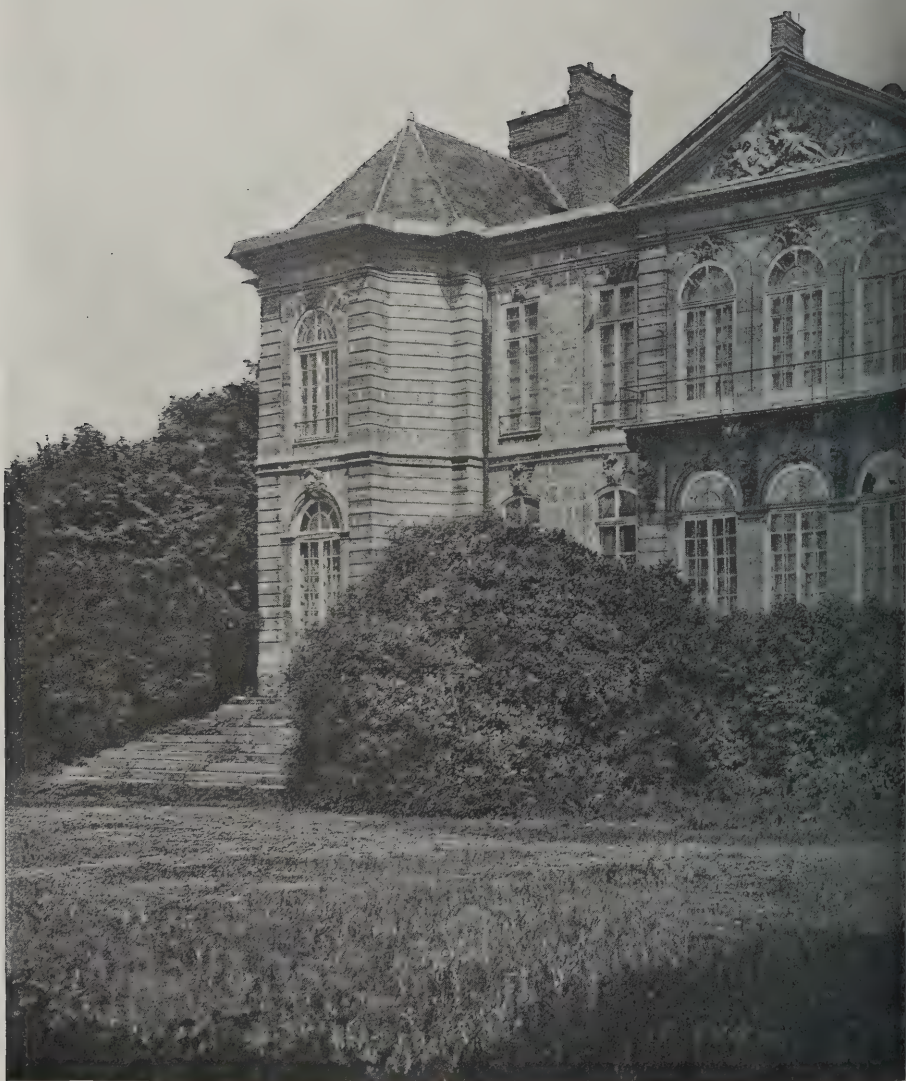
But some may say that though the opinions of the man in the street do not count (which nobody will deny), yet there is a danger of deceiving those who come to study architecture in its old examples. With this statement the writer at once joins issue, for modern work can always be recognised unless its face has so decayed (as the writer has sometimes found) that there is little evidence upon which to base a conclusion; but, even in a case of this kind, there is always at least the mortar by which identify it.

One might reasonably ask the society, "For whose benefit are all their precautions taken, for the man in the street or for the archæologist?" If the former, then by all means patch decayed stonework with stucco or blue bricks, so that he may be emphatically informed that here at one time was a stone which had decayed so that there was nothing of value to preserve. But if all this is for the benefit of the archæologist, then how are the mighty fallen! Cannot those who proudly pronounce a difference of a few years between two similar mouldings, and who date "at sight" different portions of an accretion of various periods, also recognise a modern restoration from among original features? After all, even restored work has its own periods and their styles which can be determined by "internal evidence." In the face of this, it is absurd to attempt to view restoration simultaneously from the standpoint of expert knowledge and that of untutored ignorance. I make bold to say that much of the restoration work which is now regretted—and rightly—will be valued in the future as a record of how the problem was attempted at one time. Therefore let the Society for the Preservation of Ancient Buildings continue their work in interesting the public in, and therefore educating them concerning, architecture of any age and any kind; so will their efforts become easier and more successful.

But, to give a practical turn to a somewhat academic discussion, it may be noticed that in this, as in every phase of modern building, the present period of restoration will be known as the Cement Age, with grout as its chief characteristic and that which marks it off from former restorations. The writer has often found the difficulties of this work to begin with an original old wall shaky though it may be, but with work that has been previously restored and perhaps faced with new stone. For it seems that, before the general use of Portland cement, the restorers naturally hesitated to cut away much solid stone, owing to the difficulty of making a wall solid again, when using, for instance, Roman cement, because the wall was not "run"—that is, grouted. They seem to have cut away as little as possible, to leave the wall as sound as it could be; whereas the modern practice is to cut well in and make the wall absolutely solid by grouting. So one often finds a thin skin of stone hiding, but not effectively binding across, a crack in a place where solidity is essential. So much for the hidden work of restoration. Now let me remind the S.P.A.B. that cement, so typically modern, is the ideal thing to use in restoration. Its "date" is obvious, as are its advantages, in making good any part that must be repaired. And in appearance, too, it is most suitable, for work built or pointed in "compo"—cement and sand—should be finished with a "washed" joint, by washing off the trowelled face with a stiff whitewash brush when the pointing has stiffened, but not set. This gives a sandy face to it, and takes away all the stiff appearance of modern pointing, besides preventing the joints from drying too black on new work and too white on old. Those who have seen examples of this know how fine a finish it is to ashlar, rubble, or brick walling, and how much it is in keeping with the old weathered surface which is so easily spoilt by unsympathetic handling.

A. R. F.

[It is not against the existence, but only against the excesses and eccentricities of preservation societies that we have expressed a protest in these columns.—Eds. A. and B.J.]



THE HOTEL BIRON, PARIS: GARDE



AND J. AUBERT, ARCHITECTS.

A HOLIDAY COMPETITION.

LAST week the photographs selected for reproduction from those submitted in our holiday competition showed Continental subjects. This week we give views of English buildings, two of the photographs being by Mr. H. Pickwell, of Blackheath, and one by Mr. Arthur J. Hatton, of Bromsgrove.

Barfreton Church, Kent.

This very interesting building is about seven miles from Dover. It dates back approximately to 1150, and displays some good specimens of Norman carving on the north and south doorways—especially the latter—while the east end is a fine specimen of a Norman round window.

Harvington Hall.

This is now an ivy-clad ruined mansion, about four miles from Kidderminster—between that town and Bromsgrove, close to the village of Chaddesley Corbett. It was originally the residence of the Corbetts, an old



Photo : H. Pickwell.

BARFRETON CHURCH, KENT:

VIEW OF EAST END SHOWING ROUND NORMAN WINDOW.

Catholic family, who were lords of the manor that still bears their name. From their hands it passed to the Throckingtons, Beauchamps, and, lastly, to the Throckingtons. The mansion is surrounded by a moat still filled with water, in which grow large beds of iris and various rushes. Of the dignified and picturesque massing of gables and brickwork (which work appears to have been carried out during the reign of Anne), the accompanying photograph gives a good representation. Internally the house has been stripped of nearly all its paneling, and other usual embellishments have disappeared; but it is interesting to note the many places of retreat for the priests which were provided by its original owners at a time when Catholic persecution was rife. A portion of the staircase is hinged, and by lifting this access is gained to a small chamber having a little aperture communicating with the banqueting hall, through which food supplies were doubtless passed to the hiding priests within. One of the rooms a panel swings aside and admits the fugitive to another place of safety. Again, in a passage there is a hinged board which, when raised, gives descent to a small dark hole; all these places of retreat being secured by strong bolts on the inside and all having some hole or chink through which food could either be passed or milk and broth sucked through a straw or small tube.

Particulars of Competition.

Photographs are desired of interesting buildings or details of buildings which are out of the ordinary class



Photo : Arthur J. Hatton.

HARVINGTON HALL, WORCESTERSHIRE.

of illustrations. For such photographs as we reproduce we will pay on each a fee of 5s. or 10s. 6d. (according to the value we place on them). Prints should preferably be on glossy paper. It is optional whether they are mounted or not, but the name and address of the sender must appear on the back of each. The photographs must have been taken this year. There is no stipulation as to size, but as they are for reproduction the larger the better. It is desired also that competitors should send with their prints a short description of the work shown.

NOTE.—The competition will close on September 30th, after which date no photographs can be considered.



Photo : H. Pickwell.

BARFRETON CHURCH: SOUTH DOORWAY.

THE ROBERT FULTON MEMORIAL COMPETITION.

THE first successful application of steam to navigation was made possible through the wit and perseverance of the American mechanic Robert Fulton (1765-1815), in honour of whom a small body of gentlemen in the United States decided some time ago to erect a memorial. A competition was instituted, and it is noteworthy how admirably this was conducted. First a preliminary competition was held in which designs by sixty-two architects were submitted. From these designs twenty were selected for further consideration by the jury, and ten sets were eventually approved, the authors of these ten being invited to make a more complete study of their designs and submit final studies. Ultimately the design by Mr. H. van Buren Magonigle was placed first, and the other designs were ranged in order of merit. Mr. Magonigle's scheme is here illustrated; also three of the other most interesting designs.

After the decision had been arrived at,

and before the public exhibition of the drawings, the five schemes placed highest on the list were again given back to their authors in order that they might prepare the perspectives which the jury felt would better explain the scheme to the general public, and these perspectives were shown, together with all the other drawings submitted, both in the preliminary and final competitions, at the public exhibition which was arranged later.

A certain similarity of idea was observable in many of the designs, this having been due to the particulars given in the conditions of the competition. The essential requirements were—a water gate to New York City, with a landing basin, a building for the reception of distinguished visitors, and a maritime museum, with Fulton's tomb as the central feature.

The site for the memorial is 564 ft. in length and extends along Riverside Drive, on the west side of Manhattan Island, facing the scene of Fulton's triumph—the

Hudson River, which is here about two miles wide.

The selected design comprises a flight of steps as wide as the enclosed harbour, leading to an open peristyle, on the central axis of which stands Fulton's tomb, flanked by the reception and museum buildings. The open peristyle produces the effect of a generous gateway, and masks the ragged skyline behind it. The approach to the memorial is naturally from the river.

The museum is of two stories, with basement, the latter containing the curator's offices, the meeting room of the Memorial Association, and the necessary cloak and service rooms. The second floor, to be lighted, will be well adapted for the display of historical portraits.

On the north and south colonnades enclosing the harbour, and screen off what is now—and probably long will be—an unsightly foreshore. The flat roofs of the colonnades will be used for promenades and as standing room for spectators at view ceremonies. They are a few feet below the central stairway landing, with which they are connected by a broad flight. With the park they are connected by grottoes in the buttresses supporting the two buildings. Their landward ends will be laid out as gardens.

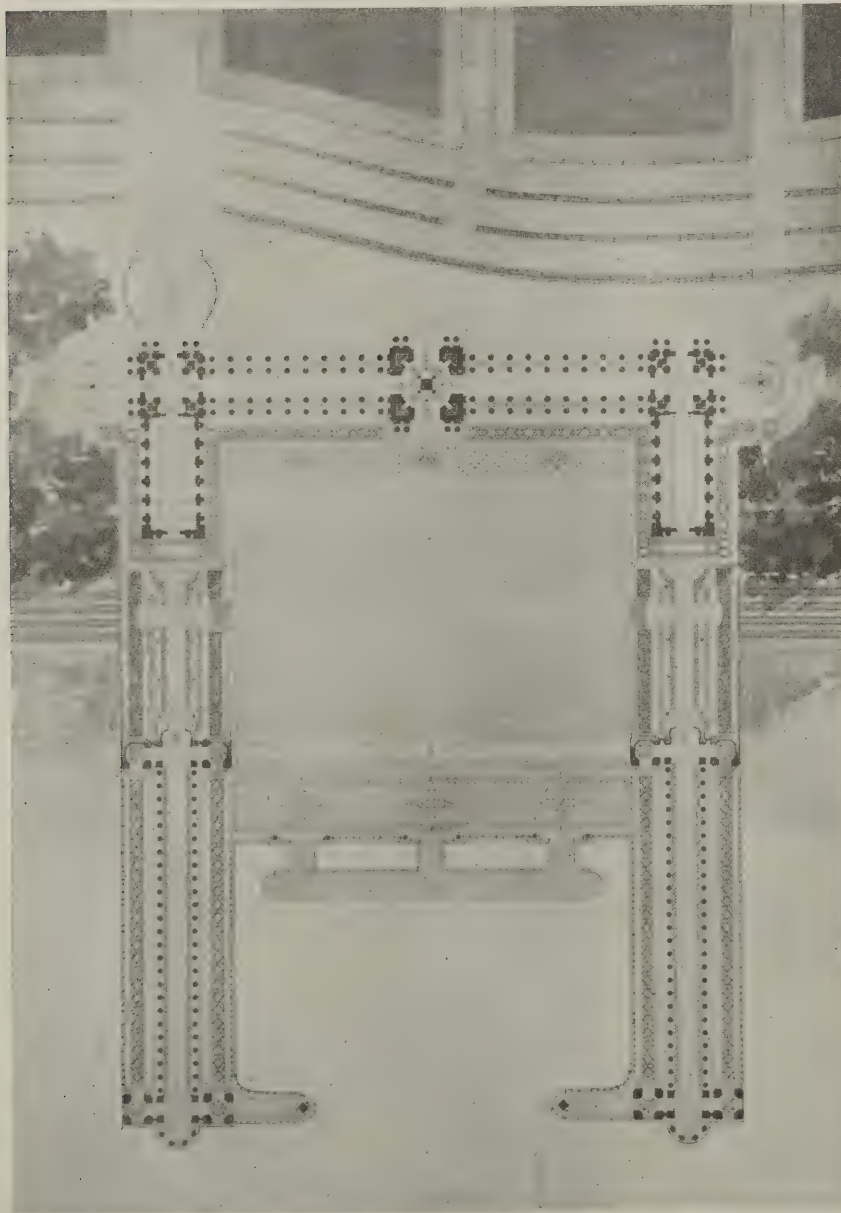
The landing pool will be for launches and barges; large vessels can lay to on the outside of the piers.

The tomb, peristyle, and halls will be of white marble, and the remainder of granite. The construction will be with steel skeletons and reinforced concrete—particularly for the foundations of steps and platforms. The buttress walls will have steel skeleton with masonry facings, with no filling, except for the gardens. The only excavation required is for the column footings. The foundations for the piers and other work beyond the shore line will rest on caissons, the water being about 45 ft. deep, and the silt nearly 100 ft.

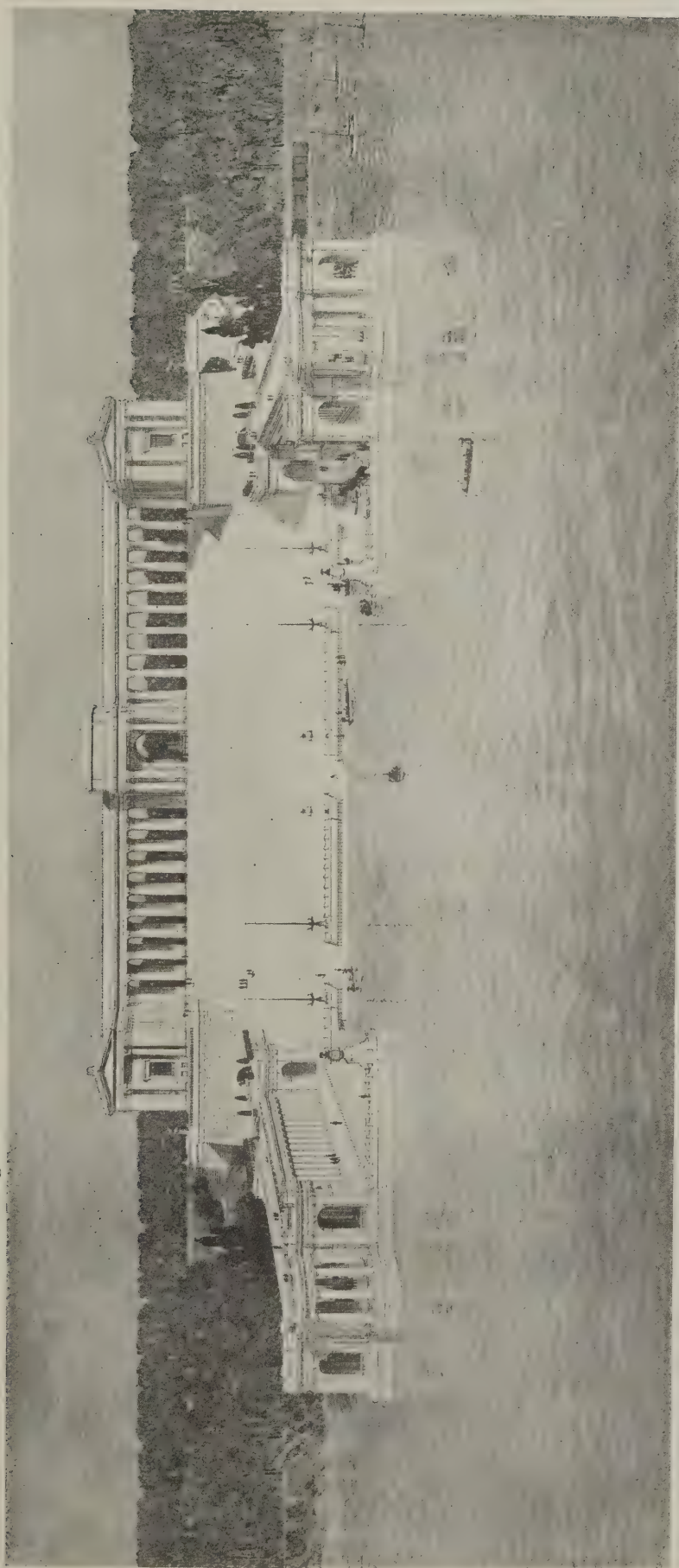
It is interesting to note that in this case after the award had been made the jury and the competitors met to do honour to their professional adviser, Mr. Lansing C. Holden, and to express their complete satisfaction with the manner in which the competition had been carried out; the relations, indeed, between the competitors and the assessors was throughout of the most harmonious and friendly character, and the only suggestion for improving the selected design has been to further break the long flight of steps so as to provide opportunity for rest, which, in so considerable an ascent, is very necessary; no doubt this is a detail which will receive attention before the work is actually carried out.

Swedish Cement Trust.

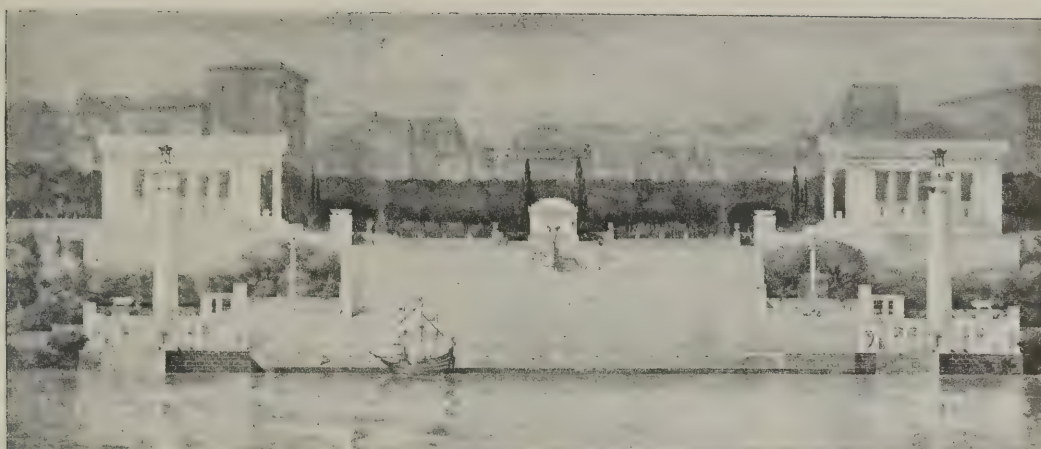
There is talk of a great concentration of the cement interests of Sweden having taken place or been decided on. The Skanska Cement Co. is the largest cement factory in the country. It has an annual production of 600,000 casks out of a total annual production of 1,700,000 casks for the whole of Sweden. Last year it paid dividend of 11 per cent. This successful concern is, it is said, going to absorb the Hellekis Co. The combination practically amounts to a trust for the Swedish cement industry, and the combined production of the country will be disposed of through a common sales bureau. It is added that the combine has come to an agreement with the North German cement manufacturers.



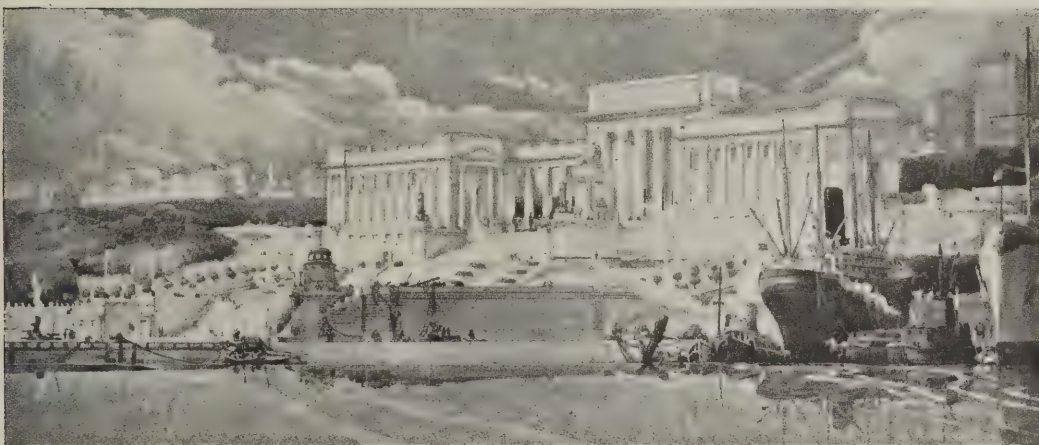
ROBERT FULTON MEMORIAL, NEW YORK CITY: PLAN OF SELECTED DESIGN.
BY H. VAN BUREN MAGONIGLE.



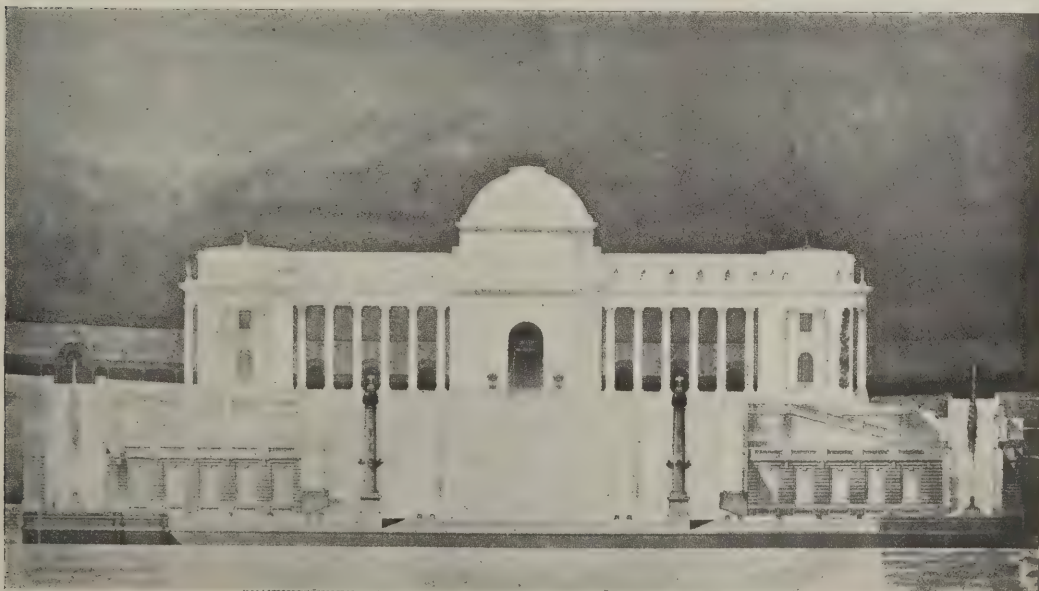
THE ROBERT FULTON MEMORIAL, NEW YORK CITY. SELECTED DESIGN, BY H. VAN BUREN MAGONIGLE.



Design Placed Second in Final Competition, by Bellows, Ripley, Clapp and Faelten.

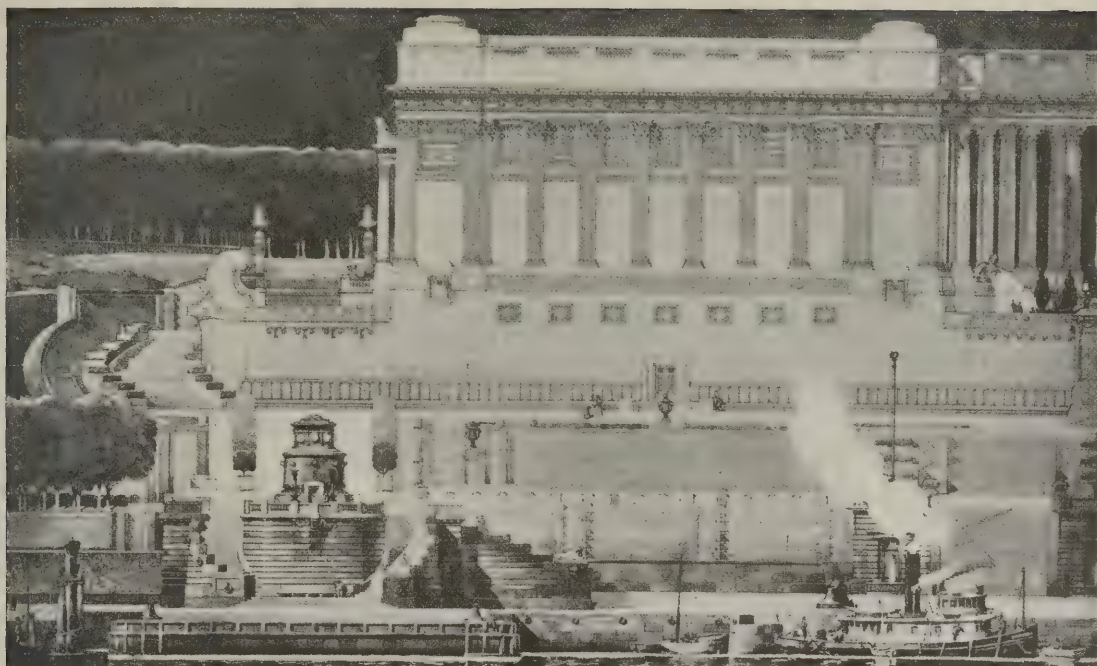


Design Placed Third in Final Competition, by Paul P. Cr  t and Albert Kelsey, and Louis E. Tallade.

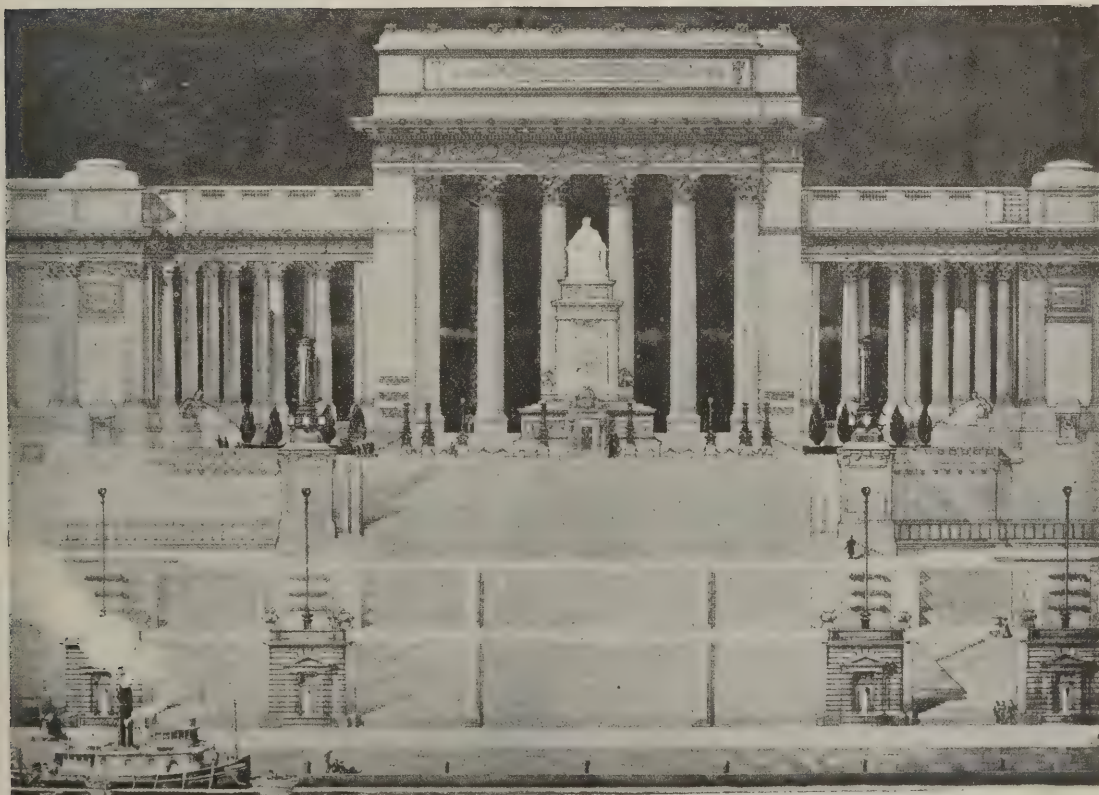


Design submitted in Preliminary Competition, by Charles Morris.

THE ROBERT FULTON MEMORIAL, NEW YORK CITY.



Detail of End, Rendered Elevation.



Detail of Centre, Rendered Elevation.

THE ROBERT FULTON MEMORIAL, NEW YORK CITY : DESIGN PLACED THIRD IN FINAL COMPETITION.
BY PAUL P. CRÈT AND ALBERT KELSEY, AND LOUIS E. JALLADE.

LIBRARY
OF THE
UNIVERSITY OF TORONTO

CONCERNING SANITARY FITTINGS.*

BY THE GENERAL COUNCIL FOR THE
NATIONAL REGISTRATION OF PLUMBERS.

When selecting sanitary fittings it is very important that the principles of their construction and the object for which their various features are designed should be thoroughly understood. There are some excellent sanitary fittings which are often brought into disrepute because they have either not been placed in positions for which they are intended, or they have been changed in such a way as to defeat the object of the inventor and the architect who specified them. The purpose, therefore, of the present paper is to point out some of the principal features to be observed, both in the selection of sanitary fittings, and also in their arrangement and fixing. All sanitary fittings should be so constructed that any part that is likely to get clogged and become a nuisance should be easily accessible for cleansing. No sanitary fittings are absolutely self-cleansing, whatever flushing arrangements are applied to them.

Three Types of Closets.

There are principally three types of water closet apparatus which may be relied upon as satisfactory under varying conditions—the improved valve closet, the syphonic, and the washdown pedestal. The valve closet is still held to be one of the w.c.'s that can safely be used where the best class of fittings are required. It is important, however, that the basin should have a slope top, and the side and back walls and capping in front of the seat bedded on the edge of the slop top quite airtight. By such an arrangement no splashing or overflow can get under the seat enclosure, and if the walls and floor are made practically airtight and only the panel in front of the enclosure made to open, the objections to the enclosed seat which exists in connection with the old style of fittings is entirely overcome. A still further improvement are those valve apparatus with white porcelain enclosures, the whole being, with the exception of the fitting seat, non-absorbent. Other features of the valve closet, which are important, are an accessible overflow which can be easily cleaned at all times, and the valve box should be porcelain enamelled and ventilated by a pipe taken through the external wall. This pipe acts practically as a fresh-air disconnector between the trap below and the basin valve, besides conveying any foul air that may exist in the box to the open air, every time the closet is used. And while it is essential that a valve closet should have an ample water supply, it does not follow that it is necessary to use more than the usual quantity. The best arrangement is a $1\frac{1}{4}$ -in. supply valve under the seat with a $1\frac{1}{4}$ -in. service pipe connected to a small intermediate cistern about 10 or 12 ft. above the apparatus. When fitted up in this way the flush is ample, comparatively quiet, and effective. The attempt to flush a valve closet by a two-gallon syphon action cistern always gives very unsatisfactory results. Where the water supply is regulated by a water authority, the best plan is to use a waste-preventing supply valve, many of which are fitted with a flush and after-flush arrangement which answers the purpose very well. It is because a syphon

cistern is not suitable for this class of fitting that certain water authorities are making the attempt to prohibit the use of valve closets.

Syphon-Action Closets.

The several kinds of syphon action water closets depend principally on three methods for setting up the syphonic action. One is that in addition to water flush into the basin, a part of the water is directed into the outlet shaft which forms the long leg of the syphon. This jet of water drives out the air and also produces an exhaustive action which causes the contents of the basin to be discharged by syphonic force. This kind of water closet is usually fitted with a second trap—that is to say, that in addition to the trap which is formed in the basin, a trap of a self-cleansing kind is fixed at the bottom of the outlet shaft, where it joins the branch soil pipe. To this shaft are attached two small ventilating pipes, one at the bottom and one at the top of the shaft, and these should always be taken through the external wall into the open air.

Another class of syphonic w.c., which is being adopted very extensively, depends for its syphonic action upon a somewhat different principle. While the one described above will work with or without the second trap, in this case a second trap is absolutely necessary. The reason is that the syphonic action is set up almost completely by an exhaustive action, which is produced by means of a small exhaust chamber inserted in the flushing pipe. A small air-tube connects the exhaust with the top of the outlet shaft of the basin, so that when the flushing water is discharged from the syphon cistern, or other apparatus, a part of the air is extracted from the shaft between the upper and lower traps, and so produces a partial vacuum and thus induces a quiet but effectual syphonic action. It will be noted that one decided advantage of this method is that the whole of the flushing water passes through the basin and is therefore utilised for flushing.

The Washdown Type.

Respecting the washdown type of water closet, whether in the form of a pedestal or of the "corbel" or "bracket" kind, these may be regarded as the simplest class of water closet with which we have to deal. And when they are constructed correctly and fitted with efficient flushing apparatus, they are the most up-to-date water closets for general purposes. But as they are produced so cheaply, many are very defective. A good washdown water closet should have a well-made flushing rim, and the back of the basin should be nearly vertical. The trap should have not less than $1\frac{1}{2}$ -in. dip, and should be of such a form as to prevent the loss of the water seal by momentum. There are numerous pedestal water closets which entirely lose their water seal when a pail of slops is discharged into the basin. And when a person leaves the apartment without discharging the contents of the flushing cistern, as they often do, the drain air has free access to the house. The cause of this is that the outgo of the trap has such an easy gradient that it will not sufficiently resist the momentum of a large body of water and hold back enough to preserve the water seal. Branch ventilation will not remedy this defect, and a trap of this kind is more readily syphoned than one which will resist the momentum action.

Some Leading Principles.

The main principles upon which sanitary fittings should be selected and fixed are briefly as follows: As in the case of

water closets, every part of a bath or lavatory fitting that is likely to be fouled by use should be easily accessible for cleaning. Every fitting should be provided with a ventilated and self-cleansing form of trap, and the end of the waste pipe should be connected to the side inlet of a self-cleansing form of gulley trap. And in no case should it deliver over the top of the grating or channel. This plan causes an accumulation of filth on the grating, and in the case of the channel increases the fouled area besides destroying the flushing power of the waste water in the gulley trap. As an example, the quick-discharging waste valve of a bath, in connection with a 2-in. waste pipe, joined to a side inlet of the hopper of gulley trap, acts in the same manner as a flushing tank, and automatically keeps it free from accumulated filth.

DRAWN TUNGSTEN LAMPS : A YEAR'S PROGRESS.

A little over a year ago the process of drawing metal tungsten, hitherto regarded as a brittle and non-ductile substance, into lamp filaments as strong as steel, had just been made a commercial possibility. The British Thomson-Houston Co., Ltd., were responsible for the development of this process, which they embodied in the now famous Mazda drawn-wire lamp. Since then the early promises of this invention have been fulfilled. For the benefit of those whose memories are short it may be well briefly to re-describe this invention. Before the introduction of the drawn wire process, metal filaments were made by mixing tungsten powder with a suitable binder and squirting the resultant paste through a very fine diamond die. The removal of the binding material from the squirted filament by the passage of an electric current left it in a crystalline and brittle condition, and, furthermore, the method of mounting the filament in sections with rigid joints at the supports produced a lamp that was fragile and not able to withstand much handling or vibration.

The drawn-wire process employed by the British Thomson-Houston Co. in the manufacture of Mazda lamps gives a very much stronger filament and lamp. By this process pure tungsten is drawn into a fine wire with a tensile strength greater than steel. The drawn wire filament is produced and used in one continuous length, thus ensuring a uniform diameter throughout instead of the varying sections of the old pressed filament lamp. It is also possible to wind the continuous drawn filament on a flexible mounting, thus doing away with rigid joints and supports such as are necessary in the pressed filament lamp. As a result of these marked manufacturing advantages the drawn-wire filament is many times stronger than the old pressed filament, not only at first, but throughout its life.

No sacrifice of efficiency has been made in the Mazda drawn-wire lamp—indeed, it is probably slightly more efficient than the pressed lamp—but its strength and durability enable it to be used satisfactorily under very exacting conditions. At the present time the drawn-wire lamp is being used on battleships during heavy gun practice, in tramcars and railway trains, in coal mines and factories, and in public buildings, shops, offices, and private houses all over the world. Over 10,000,000 Mazda drawn-wire lamps were sold last year in all parts of the globe—and this after only a year's working of the new process.

*Extracts from a paper read at the York Congress of the Royal Sanitary Institute.

BOOK NOTICES.

Early Norman Castles in Britain.

In the book notices that appear in this journal complaint is often made of the absence of plans. In Miss Ella S. Armitage's "The Early Norman Castles of the British Isles," there are, however, 45 plates, of which there are only two—a page of excerpts from the Bayeux tapestry, and a page reproduced from the Anglo-Saxon M.S. of Prudentius, in the British Museum—that are not filled with plans. This latter plate contains, however, besides some rather beautifully drawn female figures, a neat sketch of a fortification, in which the regular bonding of the masonry will probably be the chief object of interest to architects reading the book. The author adduces it in proof of a somewhat laboured contention that a *burh* was the same thing as a borough, and that all the pictures of *burhs* indicate fortified towns. This conclusion, which Miss Armitage has no difficulty in establishing, demolishes the theory of the late Mr. G. T. Clark, advanced in his "Mediæval Military Architecture," that the *burhs* were Saxon castles. Boroughs, Miss Armitage proves, were "places where the whole countryside could take refuge during a Danish raid."

The *burh*, therefore, as Ethelfleda and her husband Edward expressed it in their charter for Worcester, was "to shelter all the folk was, in fact, a camp of refuge for all and sundry. There is no evidence that the private castle was an institution of Saxon times. It came with the Normans, and, possibly as a creation of the feudal system, assumed cardinal importance in political history, as it gave immense power to the owner, whether he wished to defy his king or to harry his neighbours. In 1088, when certain Norman barons set themselves in opposition to William Rufus, each of the chief conspirators "went to his castle, and manned it and victualled it." As Freeman says, "In the eleventh century the word *castel* was introduced into our language to mark something which was evidently quite distinct from the familiar *burh* of ancient times," the word *castellum*, which occasionally appears in Anglo-Saxon charters, clearly meaning a town.

The book, it is stated in the preface, is the fruit of many years of research, in the course of which, for the first time in this connection, adequate use has been made of the information contained in the Pipe Rolls. The bulk of the work is mainly of interest to archaeologists and historians, for whose delight and sustenance the author, with a true instinct sedulously nurtured, has produced a wealth of interesting information. To the architect it is the last chapter, which deals with stone castles of the Norman period, that makes the most sustained appeal, although scattered broadcast through the book he will find many an item which is as "a light that sometimes surprises the pilgrim on his way." It is surprising "how very few stone castles there are in England which can certainly be ascribed to the first period of the Norman Conquest—that is, to the eleventh century." When we have named the Tower of London, Colchester, the recently excavated foundations of the remarkable keep at Pevensey, and perhaps the ruined keep of Bramber, we have completed the list, as far as our present knowledge goes, though, possibly, future excavations may add a few others."

In this very interesting and suggestive last chapter—as, indeed, throughout the

volume—many details are discussed with scholarly knowledge, and the generalising is always careful and just. It appears that the twelfth century was the great period of new departures in military architecture, these being necessitated by the improvements in the weapons of offence; as, for instance, when the introduction of the *trébuchet*—an instrument for hurling heavy stones with accurate aim—caused the disuse of sloping roofs, and the adoption of lead-covered flats on which the machine could be mounted. Then the adoption of the cross-bow modified the openings that formerly were made only for the admission of light: they were now splayed downwards externally, so that it was possible to take aim from them. Another development was a niche for the archers to stand in, and this had the natural effect of weakening the wall. These cross-bow windows are first mentioned in the time of Richard, who is also credited with the introduction of stone machicolations, or *hurdicia*. Thenceforward wooden machicolations seem to have been freely used, but the use of stone for this purpose did not become general until the fourteenth century. The twelfth century saw also a marked preference for the round instead of the square tower. The thirteenth century saw the keepless castle, and the frequent substitution, for the keep, of a dwelling-house for the owner of the castle, the house often being attached to the gateway, as at Beaumaris, Harlech, and Tonbridge.

To what has been already said above, it is hardly necessary to add that Miss Armitage stands well clear of the category of mere book-makers, and has produced, as the result of patient investigation and scholarly method, combined with an admirably clear and straightforward style, a really solid contribution to archaeological literature, and, incidentally, has rendered firmer and broader the bases upon which should be founded that more comprehensive knowledge of architecture which one would fain see more prevalent than it is.

* "The Early Norman Castles of the British Isles." By Ella S. Armitage, Honorary Fellow of the Society of Antiquaries of Scotland. With Plans by D. H. Montgomerie, F.S.A. London: John Murray, Albemarle Street, W. Pages xvi. + 408, 9 ins. by 6½ ins., price 15s. net.

A Bibliography of Romano-British Architectural Remains in Britain.

The arduous and ill-requited labour of the bibliographer is now being assumed in this country much more frequently than in former years, and one cannot withhold a tribute of admiration for those who pursue it with the patience and industry that are manifest in such works as the "Bibliographical List Descriptive of Romano-British Architectural Remains in Great Britain," which has been compiled by Mr. Arthur H. Lyell, M.A., F.S.A., and published (price 7s. 6d. net) by the Cambridge University Press. An enormous amount of labour must have been expended on the production of this volume of 156 pages, which, slender as it is, contains, apparently, some fifteen or twenty thousand entries, the mere setting down of which, while itself a formidable task, must have been mere child's play compared with the labour of seeking for them in the various publications that have been laid under contribution. The sites of the various discoveries are classified according to counties, which may be more logical but is, perhaps, on the whole, rather less convenient, than a straightforward

alphabetical list; which, however, would have involved the additional labour of repeating the name of each county as many times as it was concerned. This had to be done in the index, which gives a complete and uninterrupted list of place-names, and may therefore be held to atone for any difficulty that may be felt to arise from the arrangement adopted, which has manifest advantages, not the least of which are the synoptic view of what each county contains and a most valuable indication, under each heading, of the literature of the subject pertaining to each county. The book should easily fulfil its threefold purpose to (1) afford all available information regarding any excavated site, (2) to prevent needless explorations on sites that have been explored, and (3) to stimulate work on sites that have been only imperfectly investigated. It will, of course, be understood that this information is not given in the list, which simply indicates sources.

Porches and Fonts.

Whether or not faith is decaying, it seems certain that its concrete expression in architecture is steadily gaining in interest, or, to speak more correctly, the number of people who give intelligent attention to old examples is constantly increasing. It must be so; otherwise the flood of books on ecclesiastical architecture would show some signs of abatement. Very many of these works treat the subject sectionally, specialising on a few features rather than attempting to deal with the whole fabric within the compass of a volume that, when not only the thing of beauty but its price in the market must needs be considered, cannot profitably be made much larger than, for instance, the book in which Mr. J. Charles Wall has confined his attention to porches and fonts. This method has doubtless much to recommend it, whether to the amateur or the specialist, the former benefiting by the mere restriction of his field, the latter by the consequent opportunities for its more intensive cultivation.

The church porch is in many ways the most interesting, as well as the most conspicuous, feature of the building, and perhaps the font comes only second to it in these respects. The author, therefore, could hardly have chosen two more popular subjects for exposition; and obviously they stand towards each other in somewhat close relationship, and are therefore the more appropriately collated.

After discussing the relations of the porch and the narthex, and, in particular, some early confusions of these terms, the author observes: "We may, then, conclude that the *porticus* of early authors was the porch of a church, that the narthex was a series of three porches laterally open one to another, and that it contained three doors of entrance to the church; from which the triple doorways in the western façade of many of our cathedrals and greater churches are a survival." He adds, perhaps in view of the popular tradition, not altogether superfluously, "There is, apparently, no authority for the statement that the middle door was for the entrance of the clerics, the south for the laymen, and the north for the women." The mediæval porch was usually on the south side and near the west end of the parish church; and, as at Bradford-on-Avon, two porches may be found exactly opposite each other, at south and north respectively: in order that, as tradition has it, at the exorcism during baptism the evil spirit might make its exit at the north

oor, which with this object was considerably left open during the ceremony.

These citations of the quaint and curious are that besets the subject will serve to show that, quite apart from the purely architectural interest, the author has command of an abundance of fascinating materials, and of these he makes dexterous use for the enlivenment of his pages. His illustrations—mostly from sketches made with his own hand—are fresh and vigorous, as well as numerous: there are twenty-four relating to porches and 263 showing fonts; concerning which latter, which are of almost every conceivable shape and of a surprising variety of materials, the author has collected a mass of information that is profitable and delectable to architect, ecclesiologist, and general reader. Churchmen, whether or not they are of the cloth, will find it a book after their own hearts, rich in the legends and mysteries of myth, ritual, and religion.

"Porches and Fonts." By J. Charles Wall. London: Wells Gardner, Darton & Co., Ltd., 3 and 4 Waterlooster Buildings, E.C., and 44, Victoria Street, W. Pages xx. + 348, 10 ins. by 6½ ins., price 10s. 6d. et.

The Blessedness of Land-Value Taxation.

The object of the author of "Taxation of Land Values as it Affects Landowners and Others" is to withdraw the question from the arena of political controversy, and to regard it steadily from the point of view of the unimpassioned seeker after economic truth. After glancing at the theories of taxation, and citing the opinions of eminent economists of the past, the author cites examples from the colonies—Australasia and Western Canada—and deduces that rates and taxes, howsoever levied, being ultimately a deduction from the rent of land, it is therefore in the interests of landlords themselves that they should be imposed directly upon the basis on which they may ultimately rest. Whether or not one is disposed to disagree with this contention, there can be no question that the author states his case with fairness and moderation, and he has produced an eminently interesting little book, which is refreshingly free from the taint of political bias.

"Taxation of Land Values as it Affects Landowners and Others." By John Orr, M.A. London: P. S. King & Son, Orchard House, Westminster. Pages xii. + 116, 7½ ins. by 5 ins., price 1s.

The Case for Art Galleries.

The Philistines being not yet entirely extinct, the value of municipal art galleries and art museums is still occasionally denied, and, by the great majority of people, is at best but imperfectly realised. It is saddening to know how little such institutions are esteemed by the masses, for whom especially their influence ought to mean an enlarged mental and moral horizon; and even those who are fully aware of their value neglect to use them; procrastinism being a deadly and widespread epidemic. Mr. Bernard Douglas Taylor has done well, therefore, to issue (through J. E. Cornish, Ltd., Manchester; price sixpence net) a persuasive pamphlet entitled "Municipal Art Galleries and Art Museums: their Scope and Value, with Special Reference to the Needs and Opportunities of Manchester, and containing plans of the present and proposed Manchester Art Galleries." The illustrations include the selected design (by Messrs. Crouch, Butler, and Savage) for the proposed Manchester Art Gallery and

Library, and Messrs. Ashley and Newman's plans for the new Birmingham Art Gallery. The pamphlet is of more than local interest, since it gives a brief but valuable survey of what has been done elsewhere, at home and abroad, as well as an able summary of the arguments in favour of such institutions. It contains none of the fire and fervour of special pleading, but is a rational statement of an excellent case.

STANDARDISING CAST-IRON PIPES.

The Engineering Standards Committee have now issued "The British Standard Specification for Cast-Iron Spigot and Socket Soil Pipes," and, as a separate publication, the specification for "Cast-Iron Spigot and Socket Waste and Ventilating Pipes for Other than Soil Purposes." In the preface to the former specification, the sub-committee who prepared it draw special attention to four important points: (1) They are unanimously of opinion that the internal diameter of all pipes and fittings should be the same as the nominal size. (2) Some of the weights for pipes that are recommended as the very lowest that can be made in accordance with the Standard dimensions are necessarily greater than those at present common for the same nominal internal diameters; and as these pipes are always sold by length it has not been deemed necessary to specify a maximum limit of weight, a minimum limit only being required. (3) Recognising that it is the general custom to make the nominal length include the socket, the sub-committee, while agreeing with the principle of making the standard length the length in work, feel that to recommend the suggested change "would greatly retard, if it did not entirely prevent, the adoption of the Standards." (4) With regard to the caulking space in the sockets of pipes from 4½ in. to 6 in. internal diameter, the sub-committee are aware that a space of not less than ¾ in. is required under the London County Council drainage by-laws for pipes for 5 in. and 6 in. internal diameter, but the sub-committee consider that, from a practical point of view, a caulking space of 5-16 in. is preferable for these sizes.

Similar points are emphasised in the preface to the specification for waste and ventilating pipes.

These British Standard Specifications may be obtained, price 5s. each, from Crosby Lockwood and Son, 7, Stationers' Hall Court, Ludgate Hill, E.C., or from the offices of the committee, 28, Victoria Street, Westminster.

DISCOVERIES IN THE BATHS OF CARACALLA.

As a result of the recent excavations in the so-called stadium of the Baths of Caracalla (says the Rome correspondent of the "Morning Post"), it may be proved that the baths were used in the Middle Ages as quarries to provide bricks and marble for churches and palaces, and that they were also a stupendous limekiln. Numerous fragments of a very rare marble have been discovered there which correspond exactly with the columns supporting the baldachino over the high altar of the Church of St. Gregory, and the kiln has actually been found. The excavators have been singularly fortunate in regard to statuary. In the channels for discharging the water from the baths were two

archaic statues of Greek marble, one representing Apollo and the other Bacchus. Farther away was the splendid life-size torso of an athlete and a charming statuette of a satyr. From the artistic point of view the most important discovery was the fragments of a Greek masterpiece, a statue larger than life, representing Venus Anadiomena, with her arms raised arranging her hair. The general conception and execution of the statue are of extreme beauty.

There were also found the remains of the largest and most complete temple of Mithras yet known. This temple is composed of several subterranean rooms, all, as the religion demanded, inaccessible to light. The main hall is composed of a large central nave paved with black and white mosaics, and two side aisles each divided into three parts by three rows of columns.

Beneath the baths and the stadium has been found a vast network of subterranean corridors about 22 ft. wide leading into large vaulted rooms. It is conjectured that these rooms were used by the populace to keep cool in the heat of the summer. During the Middle Ages they were utilised as residences by the peasants, and here were found wine presses, wine jars, stables, and in one place a water-mill for crushing grain.

Important discoveries have also been made during excavations at Domitian's Palace on Palatine Hill. In the vestibulum have been found the bases of the columns of the Throne Room, as well as the foundations of the Throne itself.

THE NEW GRANITE PAVEMENT IN LONDON.

Whatever may be the result of the experiment being made by the Holborn Borough Council on the main east and west thoroughfare from Kingsway westward, the authorities and those who are doing the work are carrying it out in a very careful manner. The procedure is very different from the old method of setting the old "stone setts," with which roads used to be paved, the stones being laid on their sides, so that whilst the granite crust is not so thick, there are fewer joints, and the weight on a single sett is distributed over a larger area of the foundation. Those in business along the line of route are wondering whether they will find any difference in the noise arising from the traffic. The pavement laid at the junction of Tottenham Court Road, Charing Cross Road, and Oxford Street has now been in use for some months. This is a position where there is a very heavy and mixed vehicular traffic, and the granite setts do not appear to be very seriously worn at their edges. The modern method of making the wearing face of the setts flat, and by joining them together as closely as possible to get a level surface instead of the old method of leaving them some distance apart, "to let the horses get a grip," is more likely to result in a longer life to the road, and the deep concrete foundation and flat, broad bearing of the setts will help to prevent the formation of pot-holes. At the crossing mentioned there appear to be no pot-holes at present. The new roadway is being laid with great care, the surface being carefully tested with a "straight-edge" to see whether there are any depressions or bumps, defects being at once remedied. There is every prospect of a good object lesson being provided by this experiment, which will be carefully watched.

ENQUIRIES ANSWERED.

Pier in Stormy Situation.

Correspondent writes: "The erection is contemplated of a pier from 500 ft. to 600 ft. long by 30 ft. wide on a rock foundation at a point in the Bristol Channel facing the Atlantic. The situation is said to be one of the most stormy in the kingdom. Kindly say whether reinforced concrete or iron construction should be employed, giving at the same time a rough idea as to the difference in cost."
—In the special circumstances you name we think it would be best and cheapest to use cast or forged iron screw piles with a reinforced concrete deck. It would be advisable to employ the services of a consulting engineer who has had special experience in such work. Without further particulars we cannot give even an approximate idea as to cost.

D.

Drainage Problem.

Architect writes: "Of the front and back streets of an estate half has recently been sold, a clause in the covenant stipulating that all streets and drains shall be made by purchaser, by whose instructions plans for three self-contained houses have now been prepared. The existing sewer in the back street does not run with a regular gradient, but dips down a few feet from the manhole. If continued at a fall of 1 in 100 this sewer would necessitate an inordinate amount of filling in, and there will be considerable difficulty in draining any houses that may be built on the back street opposite. Kindly say whether the U.D.C. who put in the present drain is compelled to find an outlet for a drain now proposed to be constructed for the purpose of draining the new houses."
—I know of no statutory powers governing this matter beyond those contained in the Public Health Act, 1875. Section 21 gives an owner or occupier of any premises within a sanitary district the right to connect with the sewers of that authority, on giving proper notice, etc., etc. Section 23 provides that an owner cannot be compelled by the sanitary authority to connect his drains with their sewer unless the sewer is within 100 ft. of the site of his house.

Would it not be advisable for your clients to come to some arrangement with the local sanitary authority by which the portion of public sewer requiring it should be relaid at a greater depth? Otherwise it will be necessary to instal a cesspool!

F. S. I.

Hip Tiles over Octagonal Bay.

Tiles writes: "Please explain a geometrical method of obtaining the bevel for hip and valley tiles which do not occur in roofs covering a rectangular area, e.g., the hips of a roof over an octagonal bay when the pitch of the roof is 75 degrees."
—Let A, B, C, D, E, F be the half-plan of bay roof, the hips meeting at G. Draw the elevation making the sides A G¹, F G¹ at an angle of 75 degrees to the horizontal. At any point on F G¹ mark off a b equal to the length of a tile, and drop perpendiculars cutting the hip E G on plan in a¹ and b¹. Mark off c¹ one inch, and draw c¹ e¹, prolonging it to cut E G in d¹. Erect the true length of hip at E G² and project d¹, a¹, and b¹ to cut it in d², a², and b². From d² mark off d² e² equal to d a, and from a², a² e² equal to a e. Join these points and through b² rule b² c² parallel with a² e². The figure shown in heavy line is the true shape of the hip tile moulded flat. Its bevel, to

which it must be bent before burning, is shown on the left. In B G take any point v and draw x v w perpendicular to B G, cutting the eaves-line in x and w. Set up true length of hip as before; through v draw v y perpendicular to hip and set off v z on plan equal to v y. Join z x, z w and the angle x z w is the bevel. It may be well to add that unless the hip tiles are made with uneven wings handed right and left (similar to angle-tiles in tile-hanging) a better job is made of such a steep roof as this by forming a cut and mitred hip, as, owing to the acute angle between the jack rafters and hips, the tiles develop a shape which gives practically no bond. So steep a roof in this form is really unsuitable for tiling.

With further reference to the above answer our correspondent writes: "I can follow the proof of the first portion of the problem, but cannot prove the method of obtaining the bevel of tiles. Can you explain this? The problem I often have to face is to make a drawing of hip tiles where the slopes of the roofs which mitre are not of the same pitch, but I presume it will be only necessary to obtain each side by the method you describe.

"I am of opinion that in practice it would be better to mark off the dimensions a¹ e¹ and a² e² so that b¹ c¹ and b² c² will show a difference of 3 1/4 in. and thereby enable

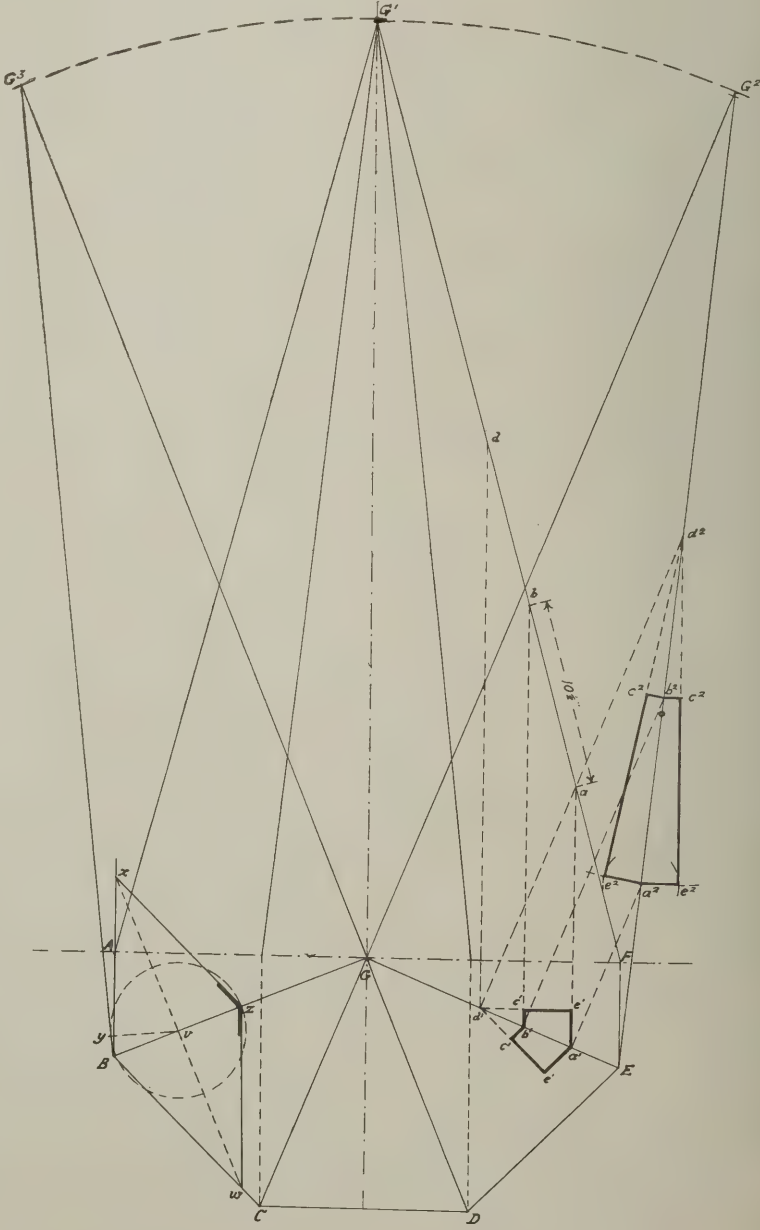
the tiles to be bonded in the usual way when plain tiles are used.

"My experience is that all these special hip tiles are made in moulds and are not bent as you suggest, but I think this useful to be the method adopted. I quite agree that a steep roof like this would be most unsuitable for tiling, but I only suggested this pitch as being different from 90 degrees or 120 degrees."

—It seems scarcely possible further to explain the method of obtaining the bevel of hip tiles as shown in the diagram; perhaps if querist will bear in mind that in obtaining the angle x z w, what is sought is a section through the hip B G³ in a plane at once perpendicular to its back and sides the proof will be apparent to him. In his intersections with roofs of different pitches the method shown is applicable as suggested. It must be remembered that the gauge of tiling will alter from one slope to the other in such a case.

My suggestion as to uneven wings to the hip tiles appears to anticipate querist's point as to the difference (which must be alternate) of 3 1/4 in. on the bottom or top of the wings.

Angular hip and valley tiles are usually made in moulds or dies, but the far preferable bonnet hips of rounded contour are often moulded flat and shaped on a horse to the required form. G.



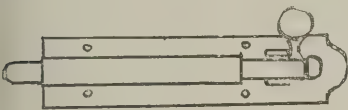
CORRESPONDENCE.

Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Respondents are asked to be brief and to write on one side only of the paper.

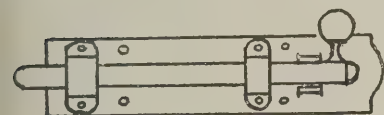
Barrel and Tower Bolts.

the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—May I point out that a barrel bolt and a tower bolt are two quite different instructions. Exchanges frequently



Barrel Bolt



Tower Bolt

be made owing to architects asking for "barrel" when they mean "tower," and vice versa.

Ipswich.

F. W. ADAMS.

The Architecture of the New Delhi.
to the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—It is a matter of regret to know that it is intended, in the noble city of Delhi, to design some of the large Government buildings in the Renaissance style of architecture. In this connection I would call the words used by His Imperial Majesty when laying the first stones of the new capital on December 15th, 1911. It is my desire that the planning and design of the public buildings to be erected will be considered with the greatest deliberation and care, so that the new creation may be in every way worthy of this ancient and beautiful city." Can any lover of art and architecture think that this "new creation" in the Renaissance style—a style foreign to the beautiful Mohammedan buildings of Delhi—will be in every way worthy of this ancient and beautiful city." Certainly I do not think so, and it is to be hoped that those responsible may yet be inspired in another manner before it is too late.

Bombay.

S.

St. Vedast's, Foster Lane.

to the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I regret to read in your columns that yet another of Wren's City churches is threatened with destruction, namely, St. Vedast, Foster Lane. It can hardly be realised, I think, that already we have lost a very large proportion of these examples of Wren's genius; Daniell, in his "London City Churches," mentions fifteen as having been destroyed, and I believe that since he wrote several others have shared the same fate. Yet Wren's churches are always worth preserving, if only as examples of careful planning on what must often have been difficult sites. But, of course, they should be precious for many other considerations. They represent a phase in the architectural history of England of which all possible evidence should be preserved; besides, their many interesting associations should alone be enough to ensure their preservation.

Then, again, one of Wren's churches (St. Magnus the Martyr) can lay claim to

the distinction of possessing the first instance of an organ being built with a swell box, thus inaugurating a new era in the art of organ building. Ultimately St. Paul's itself will hardly be safe, at the rate at which we are going, and the historian of the future may have to put on record that it was demolished to provide room for an aeroplane factory or some such highly utilitarian construction. It may be worth while to call attention to the fact that Mr. T. Francis Bumpus, in his "London Churches, Ancient and Modern," states that, "With the single exception of Tathwell, in Lincolnshire, St. Vedast's, Foster Lane, is the only church in England dedicated to that saint."

I sincerely hope that all possible opposition will be offered to any scheme that involves the destruction of St. Vedast's Church.

TUBA MAGNA.

NEWS ITEMS.

Mulai-Hafid's Projected Palace.

The ex-Sultan Mulai-Hafid contemplates building a sumptuous palace at Tangiers, where he has purchased a large estate. He is consulting French architects on the project.

A New Manchester School.

The new West End Council School at Ashton, Manchester, was opened last week. The building, which accommodates 1,200 children, has been erected at a cost of £16,000 from designs by Mr. Ernest Woodhouse, F.R.I.B.A., of Manchester.

The Rhodes Monument: A Correction.

On page 30 of our issue for July 10th we published a paragraph with respect to the Rhodes Monument in South Africa, from which it would be inferred that Mr. Herbert Baker was the sole architect. We are now requested to state that the design should be accredited to Messrs. Baker and Masey.

Classes in Reinforced Concrete Work.

We are informed that classes for the instruction of engineers and architects in reinforced concrete to be held at the Northern Polytechnic Institute, Holloway Road, N., start on September 20 for the session 1912-13. On September 27 Mr. de Vesian, M.I.C.E., is to give a special lecture, open to the general public, on large works recently carried out.

New Music Hall, Newcastle-on-Tyne.

Messrs. John Tanner and Son, of London and Liverpool, have been engaged to execute all the fibrous plaster work and decorations at the new music hall which is now being erected on the site of the old White City at Newcastle, from the designs of Messrs. W. and T. R. Milburn, architects, of Sunderland and Newcastle. The theatre is unique to the extent that it has neither dress circle nor gallery and will be capable of seating 3,000 people.

Alleged Ferry Building at Bradford.

The Local Government Board have written to the Town Clerk of Bradford to say that they do not see their way to hold an inquiry into the subject of the administration of the building regulations of the Bradford Corporation. The City Council requested that such an inquiry should be made, as the result of discussions in the Council Chamber following upon the hearing of summonses against a Bradford builder who was heavily fined for breaches of the building regulations. The points

which it was proposed the Local Government Board should inquire into were: Whether the building regulations have been laxly administered; whether leniency has been shown towards offenders; the effect of the presence on the committee of builders and representatives of the building interests; whether and to what extent jerry-building has been carried on in Bradford during the past twelve years; and whether the building regulations are sufficient.

Improvements at Buckingham Palace.

During the absence of the Court renovations and improvements are being carried out at Buckingham Palace. In the Quadrangle the drainage is being attended to and workmen are renovating the roof of that part of the Palace in which the King has his apartments. The whole of the front of the Palace is being inspected and measured with a view, it is understood, to the preparation of an estimate of the cost of some form of renovation.

New Contracts.

Messrs. Patman and Fotheringham, Ltd., of 100 and 102, Theobald's Road, and Park Street, Islington, N., have secured the following contracts: Extension to Mayfair Works, Miles Street, South Lambeth Road, for Messrs. Brand and Sons; taking down and rebuilding front and other alterations at No. 70, Fleet Street, E.C., for Messrs. Sweetings, Ltd.; new works and garage, etc., for the National Steam Car Company in Nunhead Lane, Peckham, S.E.

Disfigurement of Paris Monuments.

The Commission appointed by the Prefect of the Seine for the protection of the monuments of Paris against the abuses of advertisement has begun its labours, and the Municipal Council has decided on certain measures which will shortly be put into force. Thus no advertisement posters will be allowed on the colonnades of the Rue de Rivoli opposite the Louvre and Tuileries Gardens, and steps will be taken to prevent the disfigurement of certain churches and municipal buildings.

Liverpool Architects and St. George's Hall.

The Liverpool Architectural Society have decided to call a public meeting to organise opposition to the Corporation scheme to break up the podium of St. George's Hall for the purpose of constructing flights of steps and placing on the site a memorial statue of King Edward. The opposition is being organised with a view to engaging counsel to represent the objectors at the forthcoming Local Government Board inquiry into the matter.

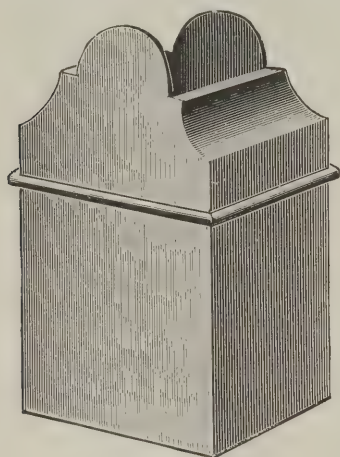
"A Business in Stained Glass and Mosaics."

In a note under this heading in our issue of September 4th, p. 256, it was stated that the business in stained and leaded glass and mosaics which the late Mr. Thomas William Camm carried on for many years at the Studio, Smethwick, is being continued by his sons, Mr. Robert Camm and Mr. Walter H. Camm, with the assistance of Miss Florence Camm. It should have been mentioned that the title of the firm is Thomas William Camm, perpetuating the name of the founder. We are informed that it is necessary to emphasise this point in order to prevent confusion with other firms.

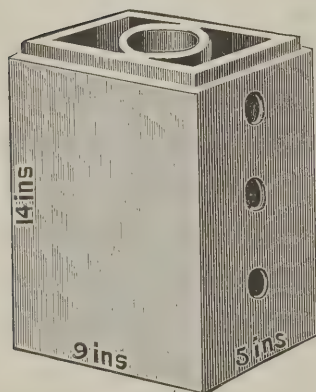
TRADE AND CRAFT.

An Encased Fireclay Flue.

A new type of encased flue, known as the "Everadiant," has recently been introduced by Messrs. Ernest E. Pither and Sons, of 36 and 38, Mortimer Street, London, W. As will be seen by the accompanying diagrams, it consists of a number of rectangular units, 14 in. high by 9 in. wide by 5 in. deep. These units may be built up to any height, each fourth section being secured, if necessary, by a metal band to the wall. On either side of the internal circular flue there is an enclosed chamber which, running the whole height of the chimney, contains the hot air



Exterior Portion.



Interior Portion.

THE "EVERADIANT" ENCASED
FIRECLAY FLUE.

generated by the flue. The sides of those sections of the flue which come within the room are perforated, thus allowing the hot air to escape, and forming at the same time an efficient means of ventilation. Those sections which are exposed externally are closed in order to keep the flue warm. The topmost section is provided with a zinc cap which is so constructed as effectually to prevent down-draught and condensation. This flue, which is made of fireclay, is easily and rapidly constructed, and it is, of course, invaluable for use with stoves where a fireplace is not available. The joints between the sections are cemented, and in order to ensure perfect stability provision is made in two corners of the flue for the insertion of vertical rods. The flue may be left plain or finished off with a variety of surfaces. Within rooms it is a usual practice simply to cover it with wallpaper, and where exposed it may be finished with rough-cast if desired. The flue has been subjected to exhaustive tests, the results having been satisfactory in every respect.

THE ARCHITECTURAL ASSOCIATION.

The curriculum for session 1912-13 of the Architectural Association School of Architecture, which has just been issued from 18, Tufton Street, Westminster, gives full particulars of the courses and classes in the day and the evening schools, of which Mr. H. P. G. Maule, F.R.I.B.A., is head master. In the former he has for assistant masters Mr. Alan Potter and Mr. W. I. Keir, A.R.I.B.A., with Mr. Robert Atkinson, A.R.I.B.A., as visiting master in design to both schools; while in the latter Mr. James Buyers Scott is the master, and Mr. C. E. Vardell, A.R.I.B.A., lecturer on theoretical and practical construction. The list of lecturers is as follows: Greek and Roman Architecture, Mr. Theodore Fyfe, F.R.I.B.A.; Mediæval, Mr. Aymer Vallance; Renaissance, Mr. W. H. Ward, M.A., A.R.I.B.A.; Professional Practice, Mr. A. O. Collard, F.R.I.B.A., while Mr. E. Constable Alston is the Life Class instructor, and Mr. H. F. Waring conducts the Water-Colour Class. Mr. Paul Waterhouse, M.A., F.R.I.B.A., is external examiner for the Board of Architectural Education.

COMPETITIONS.

*Housing Competition, Royal Welsh
National Eisteddfod, Wrexham.*

The £50 prize offered for the best set of designs in the above competition was divided between Mr. William Eaton, A.R.I.B.A., of Cardiff, and Mr. Arfon Jones, of London. More than one hundred drawings were submitted by twenty-nine architects. The competition was organised by the Eisteddfod Committee in conjunction with the Council of the Welsh Housing Association, 9, Temple Chambers, London E.C., the adjudicators being Mr. T. Taliesin Rees, F.R.I.B.A., of Liverpool, and Mr. Aneurin Williams, M.A., chairman of the board of directors, First Garden City, Letchworth.

LIST OF COMPETITIONS OPEN.

SEPTEMBER 30. SCHOOL, LLANELLY.—The Llanelly Education Committee invite designs for school buildings and domestic subjects centre at Stebonheath Terrace. Mr. G. E. Halliday, F.R.I.B.A., has been appointed assessor. Particulars from Mr. I. W. Watkins, clerk, Education Offices, Coleshill Terrace, Llanelly.

SEPTEMBER 30. NEW BUILDINGS, UNIVERSITY COLLEGE, DUBLIN.—The Governing Body of the University College, Dublin, invite architects to submit designs for new college buildings. Competition is limited to architects living and practising in Ireland. Mr. H. T. Hare, F.R.I.B.A., has been appointed the assessor. Applications, accompanied by a cheque for two guineas (returnable), to Mr. J. W. Bacon, M.A., Secretary and Bursar, 86, St. Stephen's Green, Dublin.

OCTOBER 7. ELEMENTARY SCHOOL, BECKENHAM.—Limited to selected architects. Mr. A. W. S. Cross, F.R.I.B.A., is assessor.

OCTOBER 14. PUBLIC SWIMMING BATH, BALHAM, S.W.—Wandsworth Borough Council invite designs for a swimming bath to be erected at Balham. Conditions, schedule of accommodation, and plan of site may be obtained from Mr. P. Dodd, M.Inst.C.E., 215, Balham High Road, S.W., on deposit of £1 1s. Designs to be sent to Mr. D. A. Nicholl, Town Clerk, Council House, Wandsworth, S.W.

OCTOBER 29. EXTENSION OF MUNICIPAL BUILDINGS, GLASGOW.—The corporation invite preliminary sketch designs for an extension of their municipal buildings. From the sketches submitted, the authors of not more than five designs will be selected for a final competition, at an honorarium of one hundred guineas each. Mr. John J. Burnet, LL.D., A.R.S.A., is assessor. Conditions (one guinea, returnable) from Mr. J. Lindsay, Town Clerk, City Chambers, Glasgow.

OCTOBER 31. LAY-OUT SCHEME, LLANDUDNO.—Designs are invited for lay-out of about 20 acres of ground adjacent to the Happy Valley. Particulars from Clerk.

OCTOBER 31. TOWN PLANNING, HUDDERSFIELD.—The Housing and Town Planning Committee of Huddersfield Corporation offer premiums of 100, 50, and 25 guineas for laying out certain areas. Conditions (two guineas, returnable) from K. F. Campbell, M.Inst.C.E., Borough Engineer, 1, Peel Street, Huddersfield.

NOVEMBER 1. KING EDWARD MONUMENT, OTTAWA.—Sketch models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

DECEMBER 1. ROYAL PALACE AND LAW COURTS, BULGARIA.—Architects desiring to take part in this competition should communicate with the Commercial Intelligence Branch of the Board of Trade, Basinghall Street, E.C.

DECEMBER 2. SCHOOL BUILDINGS, CARLISLE.—Particulars, City Surveyor, Carlisle.

MARCH 1, 1913. MUNICIPAL BUILDINGS, RANGOON.—The committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars £1 (returnable) may be obtained from the London Agents, Messrs. Ogilvy, Gillanders, and Co., Sun Court, 67, Cornhill, E.C.

CHEAP COTTAGES: L.G.B.
CONCESSION.

Mr. Herbert A. Day writes to state that the Local Government Board, under Mr. John Burns, has made a concession to the Norfolk district councils. A part of the annual cost of cottages to be built by the Swaffham Rural District Council and owned by them may be paid by them. This will mean more reasonable rents than have hitherto been obtainable for agricultural labourers, who earn about 15s. a week the year round.

This Swaffham Council made an exhaustive inquiry into several villages where cottages were wanted, and reported the need to the Local Government Board, asserting at the same time that the labourers could not pay all annual charges, including the repayment of the capital cost.

A special commissioner was sent down to make full inquiries, and lastly Mr. John Burns himself visited Swaffham. The result is that the latter agrees that there is a proved need of houses in three parishes named, and that there is no prospect of any being built by private enterprise. The Council is therefore urged to provide six new cottages in each village. And finally they are told that "a small annual deficiency" in the amount raised from the rents to pay all annual charges "would not preclude them—the Local Government Board—from sanctioning a loan if the circumstances did not admit of a satisfactory self-supporting scheme."

With this permission district councils may build wherever houses are needed.

THE ARCHITECTS' & BUILDERS' JOURNAL.

WEDNESDAY,
SEPTEMBER 25th, 1912.

Volume XXXVI.

No. 923.



A MAUSOLEUM OF A ROMAN EMPEROR.
(From Piranesi.)



Photo: Printing Craft, Ltd.

THE WESLEYAN HALL, WESTMINSTER. LANCHESTER AND RICKARDS, FF.R.I.B.A., ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

SEPTEMBER 25th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 923.

The Provincial Character of London Streets.

EVERYONE is aware of the feeling of disappointment, even dismay, which the drive from Charing Cross or Victoria inevitably calls up on the return from a visit to any Continental capital. Can these mean narrow streets, this provincial atmosphere of fussy activity and advertisement, envisage the heart of a vast empire? Have we not instead by some inexcusable mistake reached Liverpool, Birmingham, or Glasgow? At any rate, after these towns London wears every familiar look. Oxford Street, Bond Street, and even the historic Strand, only require their motor omnibuses to give place to trolley-cars in order to make the semblance complete. St. James's Street, in spite of its few remaining clubs, requires but one or two more terraced buildings and its transformation into Corporation Street, Birmingham, or Lord Street, Liverpool, is finished. Newgate Street, Cheapside, and indeed, most of the rebuilt portions of the City, with the exception of a small banking area, if only we could see it as it really is and apart from the glamour of its ancient names, might be in Manchester or Birmingham. At the other end of the town new residential streets of expensive houses, like Port Street or Hans Crescent, but for their huddled appearance might have been transplanted entire from Burnmouth or Folkestone.

Even the Bloomsbury squares, which still receive the visitor from the north with the resigned but dignified air of some old family butler, are showing signs of change. Here and there a tile roof or a red brick building obtrudes itself like a country cousin walking the town in knickerbockers, but we do not meet the new provincial note in all its cinematic brilliance till Russell Square and Southampton Row are reached. Here the new hotels vie with one another in the facetiousness of their façades, and a sort of neo-Nuremberg Gothic competes with the latest adaptation of German rococo Renaissance. All thought of London, the metropolitan city, has disappeared. Each new building is a law to itself, not only in height and expression, but in colour and material. The bigger it is in mass, with few exceptions, the smaller it is in scale. Yet there is a largeness of idea consonant to the idea of London about the older buildings of the town—the Nash portions of Regent Street, the clubs in Pall Mall, the Bloomsbury squares—which is wanting in most of the newer structures. Strangely enough, it required an American architect with Selfridge's Store and a Frenchman with the Ritz Hotel and the offices for the "Morning Post" to strike again the true London note. The detail of all three may be French, but the total impression is metropolitan. While most of the new commercial buildings, many of them interesting enough individually—too interesting very often—might be transferred with complete suitability to Nottingham or Leicester, we feel that these particular buildings require for their setting not only a big town, but one dominant and metropolitan. In their largeness of parts and simplicity of form we see mirrored the largeness of the London of our idea; in the hurried outlines and complex detail of the others we see

little beyond the individualistic outlook of the petty trader.

If we turn to our new theatres, where more than anywhere else we might expect to find the metropolitan spirit, the same feeling overtakes us. None possess the true London air of the old Haymarket. All are suburban. They might be Ealing Empires or Hornsey Hippodromes, expressive enough no doubt of the musical comedy they so assiduously provide, but with no implicit relation to London as a whole, and through London to the country. Perhaps the Odéon or even the Opéra Comique would frighten away the London crowds. At any rate, looking at a new London theatre façade no one would for a moment make the mistake of thinking the building to be a temple of the mind, a place devoted to the exercise of an art. We believe their owners already feel the competition of the picture palaces; from their architecture we see it is again the ancient tragedy of the younger generation knocking at the door.

If London has suffered so severely from the waves of eclectic building which have overtaken her during the last fifty years, how, one may well ask, have Paris, Brussels, and even Berlin escaped, as escaped they have? They, too, have had their revivals. It must not be imagined that the Classical tradition has had an unbroken run with them any more than with us. Ours may, indeed, be the only capital city which has endured the incongruity of a modern monastic law courts, but numberless experiments in past styles are to be found even in Paris, if one searches for them. That, however, is the point. They do not obtrude; they have to be looked for. The reason is the existence always of a strong central authority. The Napoleonic idea which provided broad axial streets provided also that these streets should not have their character destroyed by buildings of every height, colour, and contour. A uniform height for main cornices, one material throughout, and a strict limit to projecting features, will do a great deal to secure that the street may rise superior to its buildings. In London too often one cannot see the street for the buildings. If, when the London County Council failed in its first fine impulse to make a homogeneous design for the whole of Kingsway, it had substituted some such regulations, we should have been able to add to our short list one more metropolitan thoroughfare. What remains of Regent Street may yet be so saved. In the past for large areas of London the good taste of the great ground landlords and their architects served the same purpose. Now they seem to have adopted the short-sighted policy of immediate profits for individual sites rather than larger eventual ones to be obtained through maintaining the character of a whole district. To the town as an entity the result is disaster. It might reasonably have been hoped that these landlords, from the Crown downwards, would have stood as a bulwark against the rising tide of advertising commercialism. Now that they have failed it remains to be seen whether organised democracy is yet sufficiently self-conscious to take the necessary steps to secure that the expression of itself shall rise superior to that of the private individual.

Engineering Aesthetics.

IT is a somewhat new experience, and a sign of the times, that the President of the engineering section at the British Association should have devoted considerable space in his address to the question of the artistic element in engineering work, a subject which engineers have in general been in the habit of regarding as entirely outside of their province. It is a sign of the times, and a gratifying one, because it shows that there is now a public opinion as to the erection of unsightly works which is too strong for engineers to go on disregarding it. Professor Barr's attitude on the subject is in the main a perfectly sound one. He deprecates the idea of trying to ornament engineering structures by additions unconnected with their purpose, and says that in a work properly constructed for its purpose there is a beauty of fitness, which is the best kind of beauty it can have. We agree entirely. The Forth Bridge is a most striking and impressive work, but it is so in virtue of its bold construction and its immense scale; any attempt at decorating its vast members would be a mere impertinence. On the same principle, had the Tower Bridge been openly erected as a steel structure, with no attempt at disguising the fact, it would have been far more satisfactory in effect than the present piece of bad Gothic screen-work, totally false in its suggestions. It shows how fast things have moved in recent years, that most people can see and realise this now, though the fact was hardly recognised at the comparatively recent date when the Tower Bridge was erected, and it was supposed that it must be made into sham Gothic because it was in the neighbourhood of the mediæval architecture of the Tower of London. There is, however, one respect in which Professor Barr's argument seems to have missed the real point. He thinks that stone bridges are more agreeable to our taste than steel ones, because they are the product of a lengthened experience, and the best have survived; let us have longer experience in steel structure, and let there be in that domain also a survival of the fittest, and the world will then have learned to produce the best form of steel structures, and to love their appearance. But he overlooks, in regard to artistic expression, the radical difference between the two materials, stone and steel. Stone is a natural material, steel an artificially prepared one; stone can present its natural surface to the weather, steel has to be painted, and to be often re-painted; stone presents broad surfaces for light and shade, steel only presents thin lines of material; stone has a monumental effect, and (in the case of granite at all events) is in fact monumental, and will last for ages; steel not only does not look monumental, but we are still in doubt how long it will last. The brilliant engineer of the Forth Bridge, when asked how long a life he would give it, could not go further than to say that, "with proper attention," he did not see why it should not stand for five centuries. The Pantheon and the aqueduct at Nîmes, without any "proper attention," have stood respectively for about seventeen and nineteen centuries, are still grand objects, and could be used for the purposes for which they were originally intended; and it would be the same with the Parthenon, but for the repeated damage wrought to it, time and again, by the hand of man. One cannot imagine any steel structure of which a similar history could be predicted, or which would remain as an object of admiration after such a lapse of time. Monumental expression is one of the essential qualities of great architecture, and no steel structure can ever have that quality, either in appearance or in reality. But it is something to find an eminent engineer pointing out that sound and fitting structure is in itself a form of beauty not to be despised, and he will have accomplished something if he can have persuaded engineers to give up the idea of "ornamenting" their structures under the notion that they are improving their appearance, as this is the worst thing they do, often resulting in vulgarising what would in itself be a striking and interesting piece of work.

The Proposed Amalgamation of the Building Trades Unions.

NEXT month the conference on the proposed amalgamation of all the building trades unions will take place, and for some time past an energetic campaign has been in progress with the object of preparing the ground. Obviously the scheme is no easy one to carry through, but persuasive speaking can do a great deal to overcome opposition, and if we are to believe some of those who have been working hard on the score of consolidation the rank and file are practically solid in favour of the scheme. When the amalgamation is established, we are told, there will be an end to sectional strikes, and the first thing to be put forward will be a demand for a reduction in working hours. Employers therefore, know what is ahead of them, and, unless some very moderate counsels prevail, a general disturbance in the building trades is likely to follow. This is just what the building trade does not want, for at the present time despite the fact that the general trade of the country is good, in the building trade there is certainly very little improvement toward good times: and if we are to have a new era of big general strikes, matters will go from bad to worse. But the advocates of the amalgamation scheme are perhaps counting their chickens before they are hatched, as we may infer from the refusal of the Carpenters' and the Painters' societies to allow their members to vote on the question. For our own part, we very much doubt whether the scheme will ever be brought to fruition: the elements of dissension are in the midst of the building trades unions and they are likely to burst forth in their proper time. Without any pretext, the promoters of the amalgamation scheme are out for plunder: but will they get it? We rather think they will not.

A General Estimate of the Hampstead Garden Suburb.

OF the Hampstead Garden Suburb a great deal has been said, and a great deal has not been said. The movement from which it springs is a social movement rather than an architectural one, and those who have been talking most about it have concerned themselves chiefly with the social aspect of the scheme. For that reason some people have started with an undefined prejudice against the place, this prejudice arising from the remembrance of the work which a certain class of big-tie and home-spun architects have done elsewhere in the country, with the fostering approval of a band of supporters. Let it be said at once that there is always a taint of the crank about these zealots. They are extremists, and when they touch architecture they do so in an extreme way. They persist in shutting their eyes to the actual face of things. The problem they set out to solve is one concerning town-dwellers yet they invariably seek a solution in country models and by doing so they alienate a great number of people who, while recognising very clearly the deficiencies of the ordinary suburban house, are not so foolish as to imagine themselves to be goatherds or country labourers. It is one thing on a summer day to walk through an English village, where the charm of the old house remains undisturbed by modern invasions; where the eye sees time-stained thatch, lime-whitened walls overgrown with rose and with clematis; a garden filled with flowers in sweet profusion; and within the house a quaint common-room or kitchen, with its simple furniture, its bare floor, and perhaps its ingle-nook—all so artless, yet abounding with art in a real sense—so unpretentious yet so satisfying. But that is largely a mood of the moment and of the place which inspires it, and it is essentially a part of the life of the cottager and his family who are the central figures of this domestic scene. Town-dwellers are not cottagers. Their lives may be needlessly complex, their luxuries far too many; but you cannot alter that in a stroke. You cannot, indeed, have at one and the same time the simplicity of the rustic

and the culture of the other class, and the attempt to put the latter into a house created out of the simple life of the former is and always will be futile. There is more than a touch of this attempt at the Hampstead Garden Suburb. In some cases the aversion to any degree of symmetry has led to planning of the most rambling description, to "restraint" in design which becomes bare ugliness, to "variety" in treatment which is mere patch-work. But fairness demands the admission that the suburb offers much that is commendable and enjoyable. Taken as a whole it is unquestionably a great advance on the ordinary town suburb. The houses, if they err in some cases, are generally of suitable design; they are soundly built with good materials; they are spread about with green spaces; and there is a sense of unity about the Suburb which is distinctly gratifying. Walking through this garden-colony, the remembrance of the ordinary suburb comes to mind, and one makes a mental comparison between this place and the customary conglomeration of hard-featured villas entrenched in monotonous order, approached by those 10 ft. drives, with serried ranks of lobelia and geraniums on either side. The change is refreshing.

The Guildhall Scheme.

THE decision arrived at by the Court of Common Council last week to call a special meeting for the full consideration of the "improvement scheme" at the Guildhall will be welcomed by all who have an interest in the preservation of an historical area, for it means that the scheme is at present no more than a paper proposal. But the point to which we would draw attention in this particular is one which raises a larger issue. At last week's meeting one member of the Council expressed the hope that some members of the architectural profession would open their mouths, and he said that he would have been very glad if the City Lands Committee had called in five or six eminent architects; in reply to which another member of the Council promptly answered that this would be "St. Paul's Bridge over again," and another instance where the architects wanted to have a finger in the pie. Herein the whole matter lies, for in these cases, where a building of importance is concerned, the architects, very rightly, do desire to have "a finger in the pie." They recall what councils have done in the past when architecture has been left to them to deal with as they liked. In matters of this kind it should not be forgotten that an historical building is the property of the community, not of the particular local body under whose jurisdiction it happens to be, and architects, as citizens, have every right to take steps to prevent anything being done which they consider to be harmful to the building. But whenever they do so there are always councillors ready to jump up and say that architects have no *locus standi* whatever, or that they are merely making disturbance in order to get a chance of lining their own pockets. Both these charges are quite false, and it is about time that such councillors should learn a little more wisdom and see the matter in a broader light.

The Voluble Architect.

THE opinion of the man in the street, though based on very limited knowledge, always offers some points of contrast which are well worth the consideration of those within the charmed circle of the profession. Coteries of architects tell one another what they think of the public taste; they rail against it, grow fervid with accusation, demolish in scorn the pet likes and dislikes of the uninitiated layman. And they go away feeling very satisfied. Some of them, unfortunately, show a different front to things when they have to deal with them the next morning in the course of everyday business, when they have to meet the requirements of a client who, other than a client, is an egregious villain. And amid such conditions the architect sometimes



MAUSOLEUM, CYPRESS LAWN CEMETERY, SAN MATEO COUNTY, CALIFORNIA.

WILLIS POLK AND CO., ARCHITECTS.

falls from his high estate. Perhaps, indeed, he never possessed the ability to soar to any heights of excellence, except in words—words which come with such facility when punctuated with the applause of those who, professionally, think the same as the speaker. So that not unseldom we have the example of an architect who talks well, yet does monstrous ill. It has been said of the craftsman that the more fluent his thoughts are, as expressed in his work, the less likely it is that he will be found fluent in speech. The same might be said of the architect.

A HOLIDAY COMPETITION.

ON page 337 of this issue we publish four further photographs submitted in the holiday competition. Two of these are by Mr. G. A. Kay, of Douglas; one is by Mr. E. J. May, F.R.I.B.A., of London; and the fourth is by Mr. L. E. Walker, of Mansfield.

The particulars sent with these are very meagre. The barn at Haddon Hall is just outside the main entrance and dates from the year 1575, the cottage being used by the caretaker. The almshouses at Etwell, about six miles from Derby, are Elizabethan. The three-gabled house at Lincoln is presumably sixteenth-century work and is stated to be the only example of its kind in the city which has not been altered or restored: it stands close to the Exchequer Gate, and by reason of its own beauty and its happy situation is a picturesque object from any point of view. The photograph of the old house in the Fish Market at Folkestone speaks for itself.

Particulars of Competition.

Photographs are desired of interesting buildings or details of buildings which are out of the ordinary class of illustrations. For such photographs as we reproduce we will pay on each a fee of 5s. or 10s. 6d. (according to the value we place on them). Prints should preferably be on glossy paper. It is optional whether they are mounted or not, but the name and address of the sender must appear on the back of each. The photographs must have been taken this year. There is no stipulation as to size, but as they are for reproduction the larger the better. It is desired also that competitors should send with their prints a short description of the work shown.

NOTE.—The competition will close on September 30th, after which date no photographs can be considered.

THE CASE OF ST. GEORGE'S HALL.

WE are fortunate in being able to publish in this issue the actual working drawing, prepared in the City Surveyor's office at Liverpool, for the proposed alteration to the podium of St. George's Hall. This drawing has been made from a design by Mr. John Belcher, R.A., who is now advising the Corporation in place of Mr. Norman Shaw. The drawing shows very clearly the extraordinary projection into the street—some 29 ft.—which this new scheme for the steps involves. It will be seen, too, from one of the photographs of the model given on this page how unfortunately these steps are placed in relation to the block of warehouses opposite occupied by Messrs. Rylands.

If this uncalled-for alteration to St. George's Hall is persisted in, and we sincerely hope it will not survive the Local Government Board inquiry, the only logical thing for the Corporation to do will be to pull down the block of warehouse buildings.

In any case, and apart altogether from the damage done to St. George's Hall, it is clear from the accompanying drawing and the model what an ugly break in the flow of the street this projection into St. John's Lane will make. It is difficult to understand, apart from politics (and in Liverpool we believe politics may account for anything), how such a scheme can be seriously put forward. We have been accustomed to think of Liverpool as somewhat of a pioneer in matters of town-planning. Has it not its School of Civic Design and a City Engineer who has helped to plan Delhi? Yet Liverpool proposes in a main thoroughfare leading to its chief railway station to build a projection of this sort.

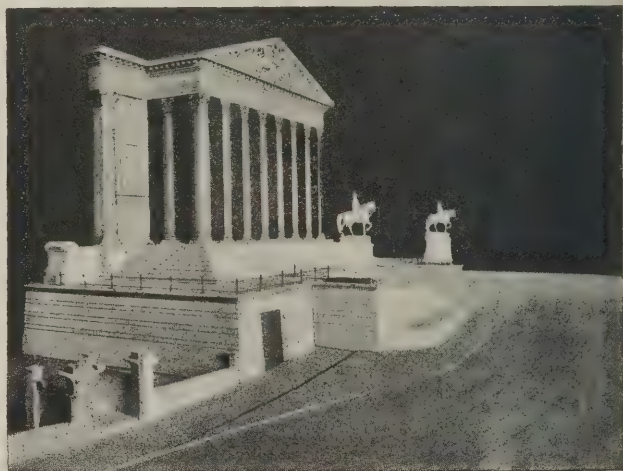
Another point that the model and the plan clearly show is the insuperable difficulty of the junction of the steps to the steeply sloping street. The line shown contains an element almost of humour, so naïvely awkward does it appear on the plan. The model shows, also, how the new steps seem to undermine the security of the portico.

* * * *

The progress of the campaign to prevent the memorial scheme being carried out may be briefly chronicled.

The "Liverpool Post" has opened a defence fund, and there has been a liberal response, the subscription list being headed by the proprietors of the paper with ten guineas. Sir William Lever has contributed a similar amount, and, through the Liverpool Architectural Society, Mr. Joseph Chadwick and Colonel J. P. Reynolds have sent five guineas each, so that altogether the first list opened with a total of more than fifty pounds. It is announced that Mr. Rigby Swift, M.P., has been briefed to lead the opposition at the forthcoming Local Government Board inquiry.

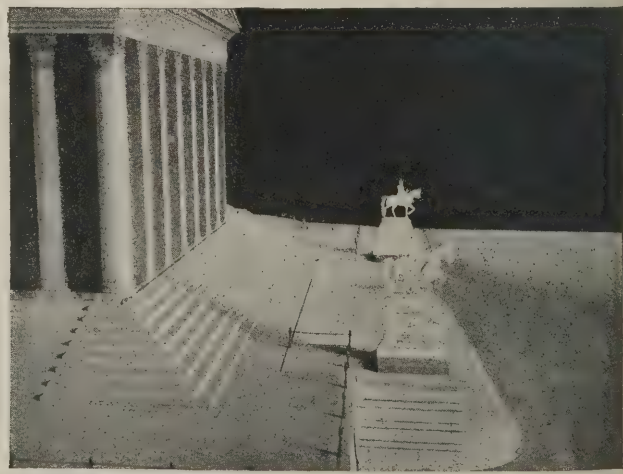
Strong protests against the proposed mutilation are being daily printed, and Councillor Austin Harford, at a meeting of his constituents in South Scotland Ward, put forward a powerful plea for the preservation of the podium. Some of his points are worth reproducing. He said that St. George's Hall, as a unique work of art, was the property of the people, and in that sense was a national possession and one of the leading art assets of the nation: therefore it demanded the protection of the authorities in just the same manner as the most precious work of the National or any other gallery. This was just as much a question of importance for the working men as it was for the richer classes—indeed, infinitely more so—as the only Art Gallery available to many of them was to be found in the monuments, the statuary, and the architecture of their public squares and streets. It was there the minds of the young and the grown-up became unconsciously attuned to the grace, the beauty, and the harmony of sculpture and architecture. Whilst the whole city was agreed upon a fitting monument being raised to the late King Edward, he contended there was not the slightest need for the perpetration of what he honestly felt, if the scheme were carried through, would be one of the greatest acts of vandalism of modern times, since, apart altogether from St. George's Hall or its plateau, there were quite a number of suitable positions where a worthy memorial could be placed. The execution of the memorial ought to be thrown open to public competition, and the younger generation of artists given a chance of showing the stuff they were made of. St. George's Hall itself was the result of a public competition which discovered Elmes and made him famous. The



View showing great projection into street and awkward junction of steps.

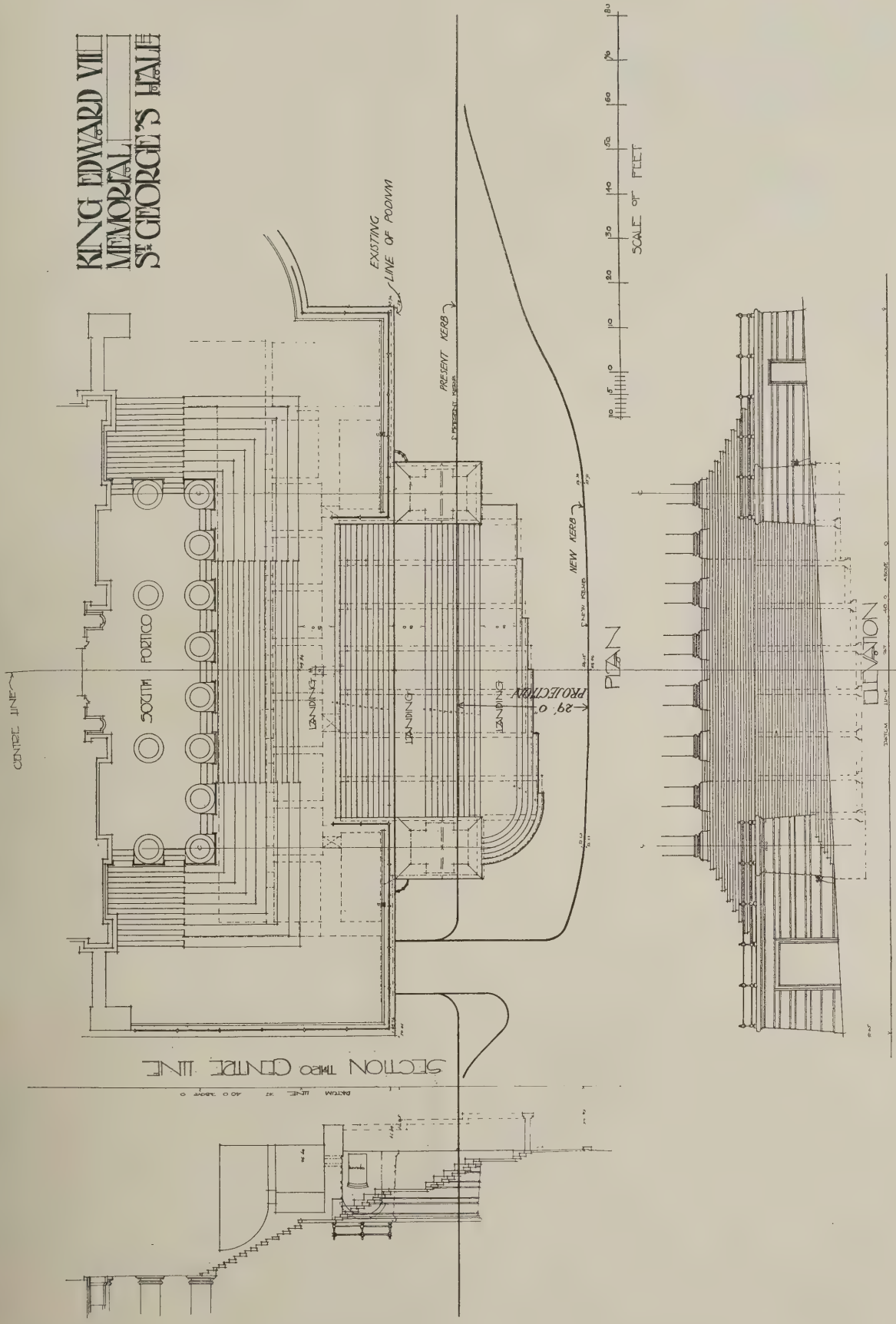


View showing that the flight of steps leads directly to the bull-nosed corner of a large block of warehouses.

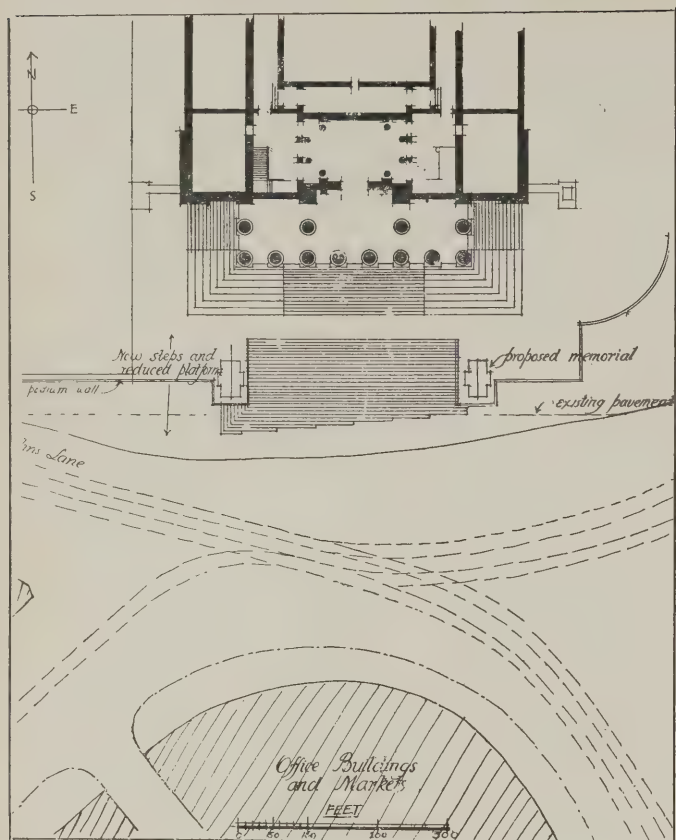


View showing the narrow landing at base of main flight, and the effect of insecurity to the great portico which the new flight will entail.

ST. GEORGE'S HALL, LIVERPOOL, AND THE KING EDWARD MEMORIAL: MODEL OF THE SCHEME.



THE WORKING DRAWING FOR THE PROPOSED ALTERATION TO THE PODIUM WALL.



PLAN OF THE KING EDWARD MEMORIAL SCHEME IN FRONT
OF ST. GEORGE'S HALL.

Liverpool Cathedral, now in course of erection, was also the result of competition, and it brought to light in our own day another young genius in Scott, its designer. Liverpool was not so well endowed in its public buildings that it could afford to allow sacrilegious hands to be laid upon its chief architectural treasure. During the last decade Liverpool had become a city of lost opportunities in art, the civic authorities rarely having done the right thing in any crisis.

The record of this ill-conceived scheme for tampering with St. George's Hall has already been given in these pages, but we feel the matter to be of such importance as to warrant repetition: for only by the most persistent representation of the mistaken character of the proposal can it be hoped to bring public opinion into such a position against it that the scheme may ultimately be set aside. We, therefore, take the opportunity of reprinting certain portions of an interview with Professor Reilly which appeared in the "Manchester Guardian" last week, as the main issue is there very well set forth:

It is desired to erect in Liverpool a memorial to the late King Edward, and the City Council have decided that this memorial shall be placed in front of the southern portico of St. George's Hall. The scheme entails the cutting down of the podium, and it is intended to fill up the gap with a flight of steps. From the first the plan was opposed, but Lord Derby threw his powerful influence on the side of the alteration, and any chance that the protests of eminent architects and others would prevail went by the board when in an unfortunate moment the name of Lord Beaconsfield was dragged into the controversy. The statue of Disraeli has a prominent place on the plateau in front of St. George's Hall, and a suggestion was made that one way out of a difficulty would be to move the memorial of the statesman to make room for that of King Edward. Since then party feeling has crushed out other considerations, and the City Council recently decided by 53 votes to 40 to accept a tender to proceed with the scheme.

Professor Reilly, in the "Manchester Guardian"

interview sharply criticised the "municipal bigotry" which threatens to mutilate the building, and described the endeavour which is being made to secure the veto of the Corporation proposal. "At the bottom of the whole thing," he said, "is the fact that Lord Derby is a fighter. There was a long delay in the completion of a memorial to Queen Victoria, and the Earl, who is the chairman of the King Edward Memorial Committee, is determined that this time matters shall move a little quicker. He may think the scheme decided upon a good one, but is chiefly concerned to get on with the thing during his Lord Mayoralty of the city."

Tracing the history of the question, Professor Reilly said that two years ago it was decided by the Memorial Committee to erect an equestrian statue, and Sir Goscombe John was commissioned to carry out the work. The sculptor visited Liverpool to inspect the possible sites, and he thought it would be a happy idea to include St. George's Hall in his scheme by placing a statue in front of the southern portico, and to break up the podium wall with two flights of steps. The position would no doubt have been a striking one for the statue, but it would have been gained at the expense of the architectural lines of the Hall. The design, when published, aroused opposition so strong that the Memorial Committee were forced to seek architectural advice. Mr. Norman Shaw was consulted. "Now, Mr. Shaw is a very old man, and is greatly respected," Professor Reilly said, "but we do not think he is the appropriate man to decide this question. Mr. Shaw was a pioneer in the days of the Gothic Revival, but he has never quite reached the Classic style. All the younger men are now studying classical architecture with renewed interest, and much purer architecture is coming in. You could liken Mr. Shaw to Sir John Millais. Mr. Shaw was a pioneer in the same sense that Millais was a pioneer in his youth in the Pre-Raphaelite movement, but just as Millais with his 'Cherry Ripe' and 'Bubbles' failed to come near to the modern forces at work in English art, so did Mr. Shaw with his Jacobean architecture fail to get near to the modern movement for pure classical architecture. That is why the whole profession, with the exception of Mr. Belcher, have protested against his assumption of authority to alter a building which sums up the classical architecture of Europe for us."

"The prettiness of Sir Goscombe John's idea when viewed by itself must have appealed to a sense of the picturesque in Mr. Shaw. He made only one small alteration in the design, this being a reversal of a portion of the subsidiary staircases. The opposition to the second scheme was greater than the opposition to the first, and the Committee proceeded to take the advice of Sir Aston Webb, Sir Hamo Thornycroft, Mr. Belcher, and Professor Blomfield. Sir Aston Webb and Professor Blomfield were against the scheme, but Mr. Belcher agreed with Mr. Shaw. Mr. Belcher is the only architect of position to take this attitude, but the Committee have refused to consider any further protests."

Professor Reilly said that the great objection to the design was the cutting down of the podium wall. The proposal is that there should be a broad flight of steps between pedestals for statuary. These steps will break the isolation of the building, over-emphasise a subsidiary axis, give the building a new and awkward connection with St. John's Lane (which is a steeply sloping street) and distort the shape of the plateau on which the Hall now stands high above the busy traffic of the town. It is interesting to note that the steps have been built once in the past and removed again. Professor Reilly's hope is that if the scheme is carried through now the rising generation of architects will see that the steps are removed a second time. The alternative proposal put forward by the architects of Liverpool to the design of Sir Goscombe John is substantially the idea of Elmes, one of the two architects of St. George's Hall. Elmes contemplated the placing of statues at either end of the podium, but it was never his intention that the mass of the podium wall should be broken with steps.

THE PLANNING OF STAIRCASES.

Wooden Staircases.

SUITABILITY and directness are the general principles which govern step and stair planning, as they govern all architectural design. By suitability is meant that harmony which exists in the propriety of expression necessary to each individual case. By directness is meant that so-called common-sense solution which is the result of elemental reasoning. Varying circumstances enforce certain modifications, and compromise must be made; but, handle them as we will, the spirit of these principles must remain. The present object is briefly to set forth those principles in their application to the planning of staircases.

With respect to the data from which the architect prepares his design, the measuring rod gives the facts; common sense and observation show the nature of the traffic; experience records the formula for comfortable and safe "going," and the manner of that "going" must be worked out according to the skill of the designer.

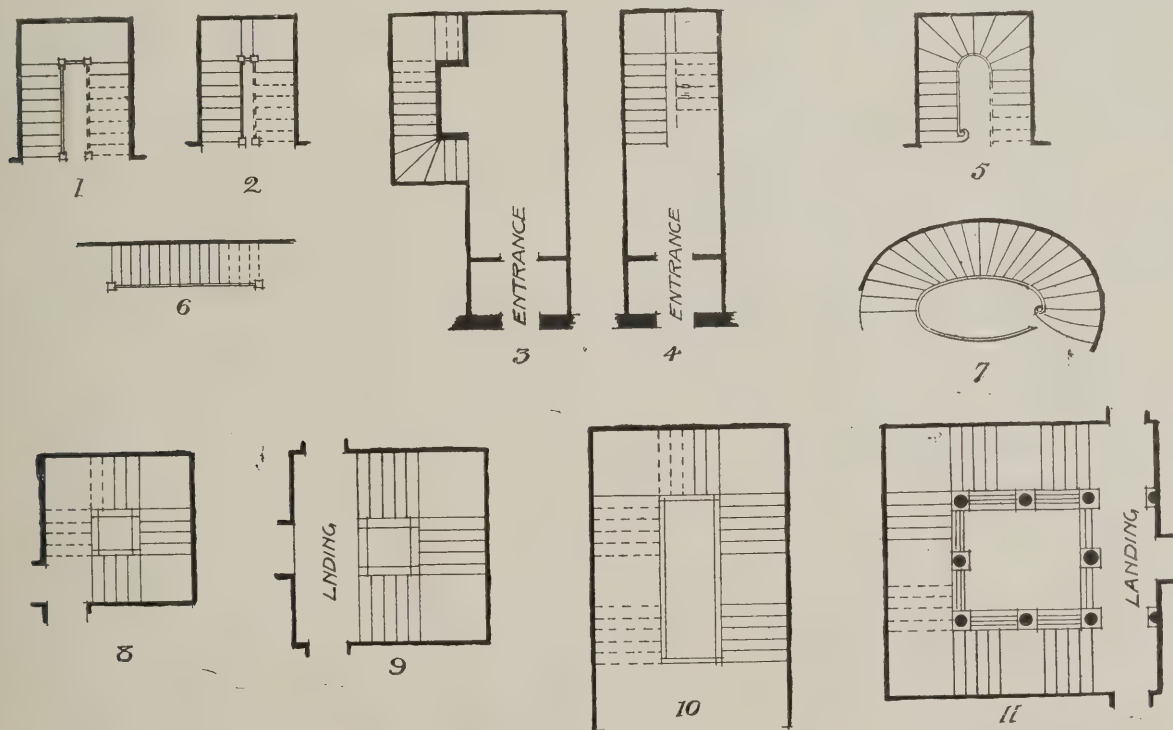
As an item in the plan of a house, the staircase is often treated with scant consideration, and it is squeezed into divers shapes until the stair must be made to fit the

is much more satisfactory than tampering with the proportions of the steps. Winders in the lower steps are not objectionable, although they are often so elsewhere, especially at the top, where they should never be used.

The choice of position for the stair is of great importance. First, it ought to be placed so as to lead from an instinctively understood position, landing so as to give central access to the rooms over; secondly, being of a private nature, it ought to be in some way screened from the main entrance.

This is not always possible in the smaller class of cottage. When possible, however, some effort should be made to place it out of the direct view of the entrance to the hall. We must discriminate between public and private stairs. A stair which looks you in the face immediately the vestibule door is opened is wanting in that homely privacy which is the great charm of an entrance hall. In great measure this charm lies in the choice of position for the stairs. Figs. 3 and 4 illustrate this point.

Special consideration of the class of home must be taken. A home must not be "overstaird." The staircase ought to be in a sense the key to the class of the



WOODEN STAIRCASES.

case. Thus for the sake of 10 in. in the width or the depth, merely a passable stair is provided instead of a really good one. To state this is not to suggest extravagance. How often is the half-landing of a double-flight stair converted into two quarter landings with two awkward steps between them for the want of 10 in. in the depth (see Figs. 1 and 2). The staircase has been robbed probably to extend a room which could have been extended quite easily without any such sacrifice. Another example, a recessed stair, for want of 10 in. in either the width or the depth of the staircase, is often ruined by the projection of its first step beyond the wall face in a manner which makes successful treatment impossible. Flights are reduced by 6 in., treads narrowed by 1 in., and risers raised 1 in. for the same feeble and insufficient reason.

If space must be economised and the position is suitable, the use of winders in the lower part of the flight

house. Small houses call for the quiet simplicity of cottage traffic. Houses of the more palatial type must have expression in stairs of appropriate dignity. Palladio says: "As to the spaciousness, it will be enough, if in respect of the bigness and quality of the fabric they do not appear too little nor too narrow."

Much of the dignity of a stair depends on the lighting, the distribution of which is essential to its practical utility. The beginning, the turnings, and the landings are the vital points where ample light is required. Leaving aside the claims of art, in so far as that distribution can be best arranged, let the efficient lighting of these points be of first importance.

Proper headway must also be considered. In the domestic work which is now being discussed, it is a common thing to see a good deal of scraping and chopping of trimmers to get the necessary headway. It is true that 6 ft. 6 in. from the nosing of the step to the

trimmer immediately over may be safe headway. When one descends to that point, however, it seems much too small, and is distinctly unpleasant. The height should never be less than 7 ft., and even in some instances does not give sufficient freedom. On the other hand, too great headway robs a stair of much of its comfort. Palladio's words regarding the spaciousness of the staircase might be paraphrased here. As to the headway, "it will be enough in respect to the bigness" if it seems not too great and not too small.

The close stair, as shown in Fig. 3, has much to recommend it, and provided it is made wide enough (not less than 4 ft.) it fulfils all that is demanded of it. It is simple in treatment and eminently suitable for small domestic work.

The following plans illustrate a few types in common use. Fig. 6 is a simple straight-flight cottage stair, which can be in one flight when the height is not too great. Figs. 5 and 7 show plans of geometric stairs. The continuous inner string and handrail ranges from top to bottom, and the scroll and curtail at the bottom is typical. This class embraces many forms—circular, segmental, and elliptical. When well detailed this is a beautiful type of stair, but always most satisfactory when treated on a circular or elliptical plan.

The geometrical stair is really a stone type, and it is questionable whether it should be executed in wood. The method necessary to obtain the helical curve in wood is not altogether comparable with the spirit of true joinery.

The newel stair which attained such perfection in Elizabethan and later Renaissance times has decorative possibilities which were well understood by the designer of that period. It is curious that this form should have sprung suddenly into use immediately after the narrow circular newel stair without any evident process of development. The decorative spirit of Elizabethan times found ready inspiration in their detail, and the burst into sumptuous peace was expressed in the generosity of the staircase. Its position of importance in Elizabethan houses was as distinctive as the great gallery.

Steps were arranged in broad, short flights of easy going; half and quarter landings and gallery landings were used freely. Many examples show long flights and winders, but it is more characteristic to find short easy flights with frequent landings. Figs. 8, 9, 10 and 11, are a few typical plans. The variety of decorative

effort lavished on these stairs was endless. Newels were large, and were carved with strap designs crowned with balls, shields, or figures, etc. Balustrades were often turned, or were flat-shaped pieces pierced and carved, pilasters with arches richly carved, and often plain. Hand-rails were massive and heavily moulded. At Audley End the newels have been carried to the ceiling and formed into an arcade around the well, intermediate posts being introduced; arcaded landings or galleries were introduced into the more elaborate staircases. Aston Hall, Audley End, Hatfield House, Crew Hall, Knowle House, and Aldermaston, are a few of this most prolific class.

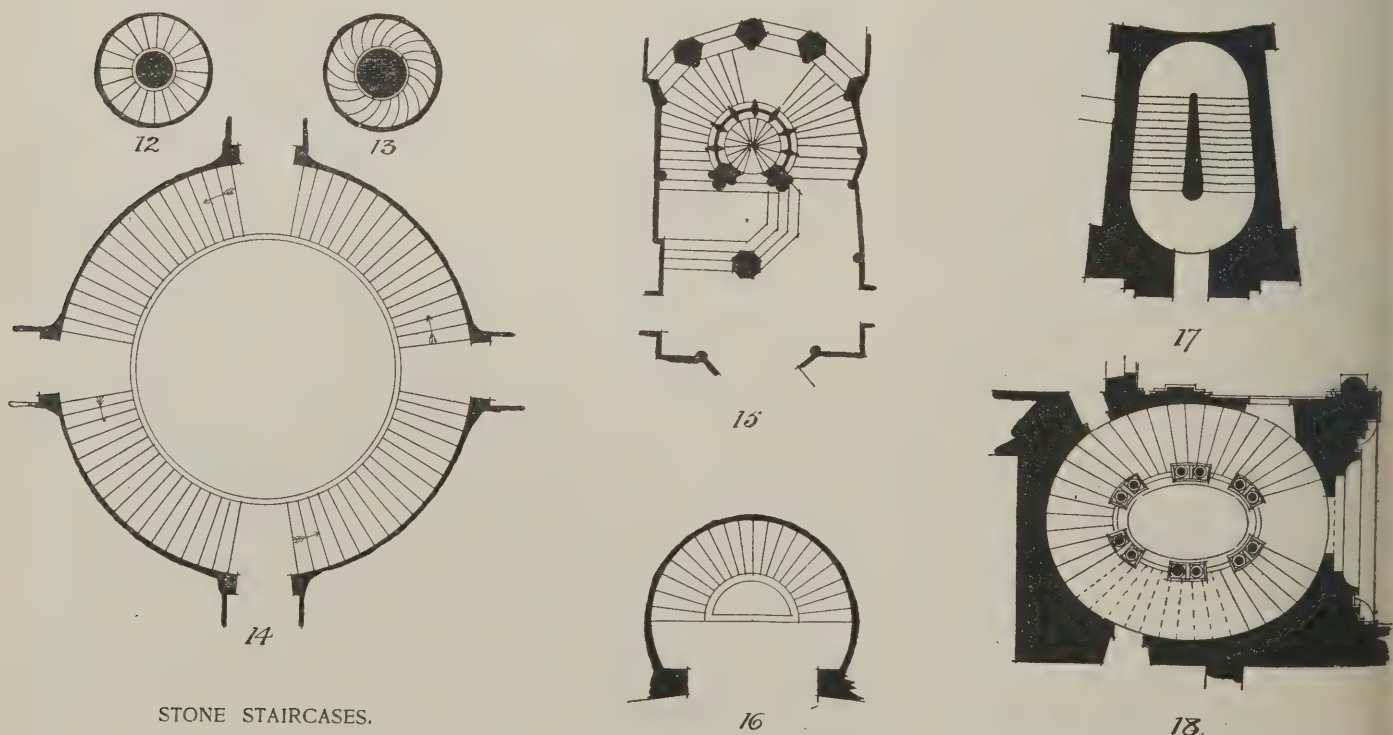
In the later Renaissance the newel stair partook of the broader character of detail, longer flights were used, and a more severe classic treatment was observed; richly carved and pierced foliage was used in the balustrade; newels were massive and elaborately carved. A very fine example of this type can be seen at Sudbury Hall, Derby.

Stone Staircases.

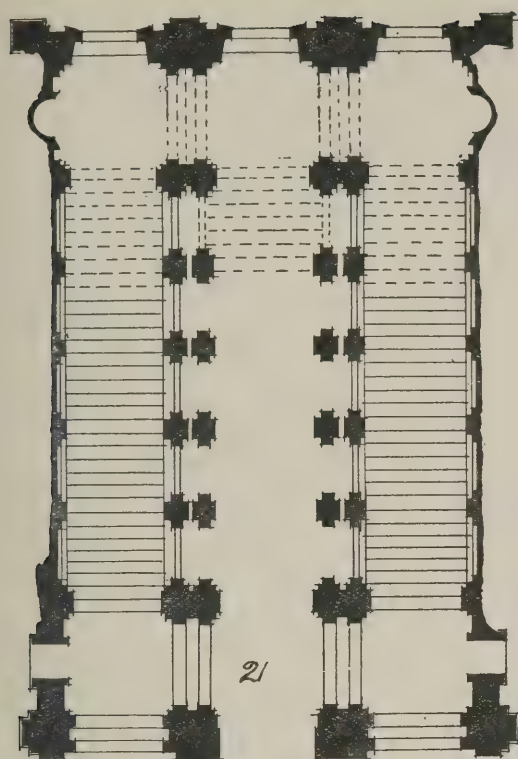
The circular turret newel stair is now seldom used. The principle of forming each step with a section of the newel worked on the narrow end and the wide end, housed into the wall, is eminently sound. The difficulty of inserting new steps in cases of repair is, however, a serious one. This difficulty is not felt in those steps which are carried on a continuous groined vault under the soffit. A groined roof springing from the walls and the centre shaft formed a fitting termination to this style of stair. Circular stairs with open newel are often seen. The progress of the science of stereotomy made possible the wonderfully beautiful treatment seen in many of these stairs. Nowhere did they attain such grandeur of proportion and treatment as in the Chateaux of the Loire Valley. Treads were as much as 10 to 12 ft. wide, and the great newel was decorated in beautifully carved forms applied to the spiral. The hand-rail was worked on the newel and formed a prominent feature in the decoration. Chateaudun gives fine examples.

The independent external treatment of these staircases made them outstanding and governing features of the design. In place of corridors, stairs were duplicated on plan, and the privacy of suites of rooms was ensured in this way.

There is a striking similarity in the position of these staircases seen in the plans of the Castles and Palaces of



STONE STAIRCASES.



Scotland and the Châteaux of France. Compare the plans of Linlithgow Palace and the Château de François. In both plans they are placed in the inner angles of the quadrangle. In many of the Scotch keeps the great walls admitted the stair within their breadth. They were narrow and awkward, and suited their purpose of defence, which was of more importance than that of convenience. Glamis Castle furnishes a typical example of this class.

Palladio gives many plans of stairs, and devotes considerable space to the consideration of circular stairs. Figs. 12 and 13 are stairs with solid newel. Fig. 12 has its diameter divided into three parts—two go to the steps and one to the newel. Fig. 13 has its diameter divided into seven parts; three are given to the newel and four to the steps. A similar proportion is noticed in the circular stair in Trajan's Column. The segmental form of the steps as shown in Fig. 13 gives variety and richness to the stair.

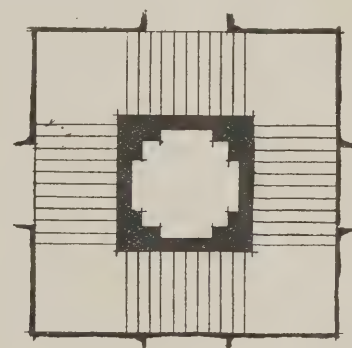
Fig. 14 is a plan of the circular stairs with open well at Chambor Blois, also from Palladio. There are four entrances to the staircase, and four stairs start from the same level to four different landings. Palladio's plan shows four stairs, whereas there are really only two in the actual example. In a building at Santiago, now used as an orphanage, there is a similar staircase with three separate stairs leading to three landings at different levels. They are fascinating and amusing.

Street's stairs, Fig. 15, on either side of the great Hall at the Law Courts, are a most interesting treatment. The outer and inner flights are entirely independent, and a charming groined vault decorates the outer flights. Fig. 16 is from the Paris Opera House. Apsidal landings are most suitable for theatres, as the risks of being crushed are thereby minimised. Fig. 17 is from the theatre at Odessa. Many of the London theatres have the angles rounded; indeed, in this respect they are ahead of many of the Continental theatres.

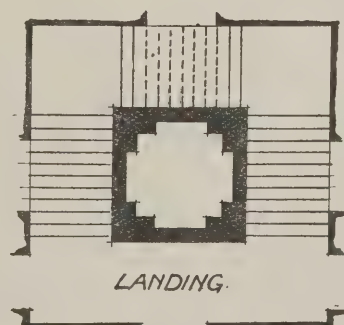
Italy is rich in stone and marble stairs, and her examples spell the Alpha and the Omega of the whole question of step treatment. The vital points of the problem have been grasped, and the fixed principles of suitability and directness have been laid down. Dignity and convenience have made terms with each other. Comfort has been searched for in the proportions of the steps, and by these proportions the discomfort of long flights has been minimised. Palladio lays down the maxim that

flights should not exceed thirteen steps, but this view does not seem to have been shared by the other great masters. Stairs have flights ranging up to forty steps, straight, circular, or elliptical, always direct. Unlike France, Italy never varied from these simple forms, which they embellished with unequalled artistic instinct. In plan the stair is always associated with the structure, and its treatment is always incorporated in the general design.

The elliptical plan, Fig. 18, is from the Barberini Palace, and shows a continuous flight of forty steps. The use of intermediate landings in an ellipse introduces an element of unrest which robs it of much of its beauty. The breaks in the curve are unhappy, and it would be well to use this type of stair only when it can be continuous. Borromini has realised this, and has given a perfect rendering in this example. Twin columns at six points in the intra-ellipse carry orders worked to the helical curve with balustrades between the pedestals mounting five complete revolutions. The effect is one of most exquisite grace, and the continuous joy of ascending such a stair goes far to dissipate any fatigue which might be felt in the ascent. In such long flights the proportion of tread to riser must be carefully studied, so that the going may be as easy as possible. When Barry defended the flight of twenty-six steps, which he proposed putting into the Houses of Parliament, he put the proportion of utmost comfort at 16-in. tread and 5-in. riser. This, he declared, made it as easy as walking on the level. Palladio puts 12 in. and 16 in. as the minimum and maximum breadth of treads, and 4 in. and 6 in. as the limits of variation in risers. These latter proportions correspond with the formula laid down by Tredgold, 2 risers + 1 tread = 24 in. Barry's proportion, however, works out at 2 risers + 1 tread = 26 in.



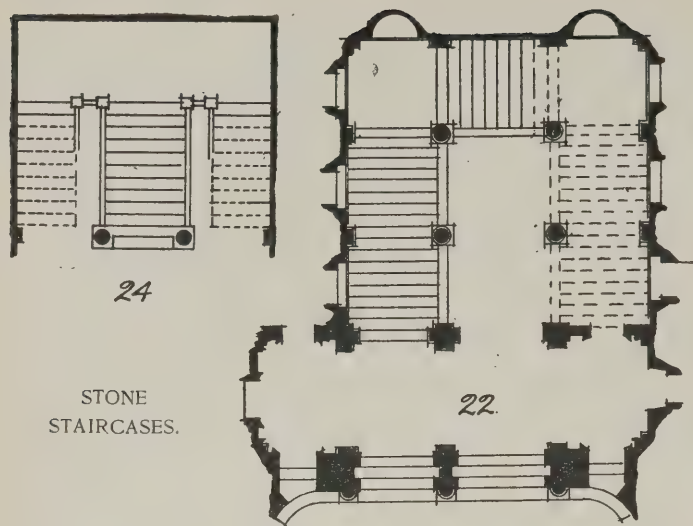
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Fig. 19 shows a simple square staircase in four short flights and four quarter-space landings. Two parts go to the steps and two to the well. The quarter-space main landing is, however, too cramped, and a half-space landing is more convenient, as shown in Fig. 20.

The stair in Fig. 21 is from the Corsini Palace, and has in all fifty-three steps. The greatest flight has thirty-five steps, and is approached from two faces. The stair



ascends on either side of the vaulted corridor, which supports the top middle flight. The stairway itself is covered with a raking vault. The palatial scale and dignity of this stair is striking, but it is doubtful whether the weariness of the long, straight ascent would not be somewhat trying when compared with the Barberini example.

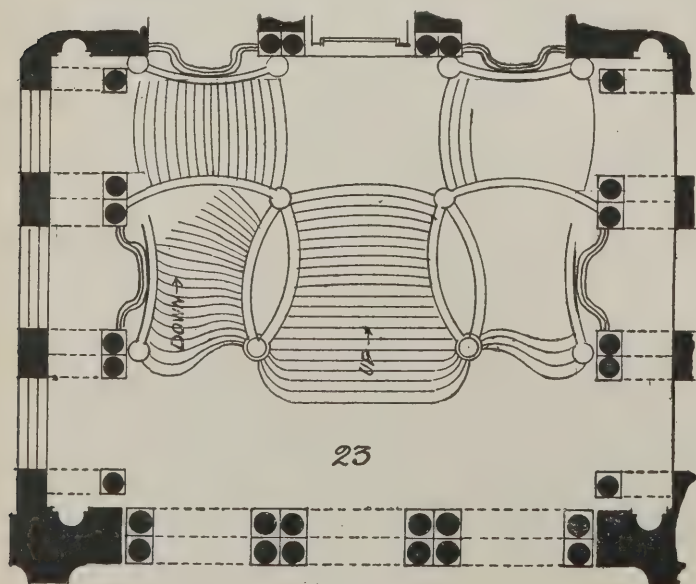
Fig. 22 is another of a similar class from the Brachi Palace.

The semicircular flights of twenty-eight steps, rising on either side of the apsidal hall of the Villa de Papa Giulio, scarcely come under the head of staircases, as they are designed as steps housed into the walls of the hall.

A peculiarity often seen in France is that of torturing the form of the stair and steps into unsightly and unwarrantable curves. Ogees and other equally awkward forms are often seen, and Fig. 23, from the Paris Opera House, illustrates the same peculiarity. Such varying forms are always uncomfortable and never effective.

An interesting and effective stair can be seen in the waiting hall of Euston Station; it has thirty-one steps in all, seven in each of the first three flights and ten in the upper flight, and the risers are $6\frac{1}{4}$ in. The flanking second and third flights with semicircular landing are well managed, and, although the first and fourth wide flights are partly screened from each other, the full effect of the rise is maintained by the continuity of line, and the order in the gallery over is not harassed by the raking lines.

Fig. 24 is a type of stair in common use. When this plan is used the main flight should be one-third greater in width than the minor flights.



THE CONDITION OF STA. SOPHIA.

THE fears as to the structural stability of Sta. Sophia, at Constantinople, have been referred to in previous issues of this journal, and to the information already given may be added the following letter from Mr. T. G. Jackson, R.A., F.R.I.B.A., which appeared in "The Times" on Monday last:

It is, I believe, three years since the Ministry of the Efka, which has charge of all the sacred buildings in Constantinople, began to take advice about the settlements in the structure of Sta. Sophia. Signor Manangoni, the architect employed at St. Mark's, Venice, made a report, and the tell-tales of glass and cement referred to in your columns were put on by him. He examined the foundations, and I understand found them based on a firm stratum of schist. I have not, however, seen his report. Nothing was done further.

As I happened to be in Constantinople in 1910, I, too, was asked by the Ministry of the Efka to examine the building and make a report, which I did as well as the short time at my disposal permitted.

The construction of Sta. Sophia may be briefly described as follows:

The mighty dome, with a diameter of more than 100 ft., rests on four great arches, which are about 15 ft. thick, between which are the spherical pendentives which bring the square plan into a circle, and are the triumphant invention of Justinian's architects, Anthemius of Tralles and Isidorus of Miletus. These arches spring from four great piers at the corners of the square nave, which Procopius tells us were built of solid stone run together with lead, though from what I saw I believe them to be, partly at all events, of brick. On the stability of these piers and arches of course the safety of the whole construction depends. They are supported on the east and west sides by great semi-domes of the same span as the arches forming, in fact, continuations of their 15 ft. soffits. On the north and south sides they are sustained by four vast buttress walls, which, being pierced by arches on the ground floor and in the gallery above, are practically flying buttresses, whose stability depends on the exterior piers which range with the outer walls of the aisles. These buttresses are not solid, but contain chambers, and their exterior piers contain winding stairs. They are, therefore, not so strong as they look, and they have given way seriously.

Seen from the floor of the mosque a terrible bulge in the north-east pendentive catches the eye at once. But it is not till one ascends the dome that the full seriousness of the mischief can be appreciated. From the gallery surrounding the base of the dome it is apparent that the plan is no longer circular, but is deformed, and that the great arches have also suffered distortion. The dome consists of forty ribs of brickwork covered with mosaic now plastered over, with brickwork between rib and rib, the whole meeting on a ring at the crown. The crown seems to have sunk, and many of the ribs have also sunk so much that some of them are in some parts nearly, if not quite, straight, instead of being convex, and have, therefore, lost their arch-construction. That the dome still hangs in air and has not fallen is due to the singular stability of that form of construction. Writing as I do from the island of Ischia, I observe that whereas most of the ordinary churches were thrown down by the earthquake of 1883, and are in ruins, those that had cupolas are still standing.

Turning to other parts of Sta. Sophia, I found by plumbing the walls and columns that they were out of the perpendicular chiefly on the north and south sides, and some of the vaults, especially in the gallery, seem in danger of collapse.

I need not go into further particulars, which might be too technical to interest the ordinary reader. What I have said ought to be enough to call attention to the serious condition of this famous building, the finest flower of Byzantine art, which marks the turning point of perhaps the greatest revolution in the history of architecture.

HERE AND THERE.

IN the midst of any general movement it is always difficult to form a just estimate of individual features if they happen to receive the approval of leading men. This, to me, is very clear in the realm of domestic architecture. An architect possessing ability which places him above the average level develops a phase which is at once regarded as something fresh. We crowd round and applaud him, and he goes away, like a successful speaker at a public meeting, with his head brushing the stars. Henceforth, unless he is a very evenly balanced man, he will ever seek new achievements, and some of the things he does will be based on mistaken notions. But he is now a great light of the profession, and the smaller men around him are blinded by his brilliance. His work is copied, and in this way a certain vogue arises. The danger lies in the probability that the work of the smaller men will be but a feeble reflex of the other. Who, for instance, has ever done Mr. Voysey's houses as well as he does them himself? You may not like the rough-cast buttresses, the tarred chimney-pots, and the heart-perforations in door and baluster, but one can see in a moment how much better these are done in the original than in the copies. This phase of domestic work seems, however, to have had its day. The farmhouse type has succeeded it, thanks, chiefly, if I am not mistaken, to the talent of Mr. Lutyens. And one of the features of this latter type is the brick chimney-piece. I have seen it in many recent houses, both large and small, but it is always anathema to me: and having expressed that opinion I am brought back to my first sentence—for there are not a host of architects now introducing these brick chimney-pieces simply because they have become a kind of fashion, under distinguished patronage? These chimney-pieces conjure up the vision of a roughly finished apartment with a stone floor, the ceiling heavily beamed, with dangling hams overhead, and a pile of logs sending their thick smoke up the ample flue; and in the midst of these surroundings one sees a yeoman and his family sitting down at a sturdy table set around with simple platters and mugs. But in what midst do we see this same chimney-piece now set? The yeoman of simple tastes becomes a town-dweller of cultured habits, possessing a nice fancy for old furniture, but a poor digestion: and we are asked to believe that it is all quite proper for this man, after dining at a Chippendale table, with its delicately fashioned appointments, to turn round and place some Best Wallsend burning in a rough brick chimney-piece—embellished probably with silver photograph-frames! This is the expensive expression of the simple life. Sometimes we are favoured with rubbed brickwork ingeniously put together, enclosed perhaps in a wood frame, or brick ends are treated as a sort of dentilling to the tile mantel-shelf. And sometimes, too, we see this chimney-piece in the ingle-nook which was brought originally, in company with the settle, from the village ale-house. For my part I will have none of them, and I shall never lose an opportunity of inveighing against the ideas they embody. Give me, instead, the chimney-piece of Wren type, with its big roll moulding at the edge, its marble surround, and the picture in its mantle-frame above: or, if funds will not allow so much, a chimney-piece of Adam pattern or of early nineteenth-century type, with some festoons or reed motifs for enrichment.

* * * *

Is the architect a "practical" man? Those who have had the pleasure of reading Mr. Inigo Thomas's "Key-stones of Building" will know that the client frequently thinks he is not; and the bricklayer is of the same opinion. This is a case where clothes make the man. To convey the impression of being thoroughly conversant with the technicalities of drain-laying and the proper setting of a kitchen boiler, corduroys and a cap will be

far more effective than box-cloth and a green Homburg. And thus it comes about that, secretly, the client has sometimes a very low opinion of his architect as a practical man, and takes the clerk of works aside for a few moments. It is all the result, I suppose, of the erroneous idea that architecture is a drawing-board business. And really Mr. Prior would have us all go back to first principles: under which régime the house would simply grow in the building of it, and we should put a window here and a bit of timber there, just as it struck us as we went along. The real way lies, no doubt, between the two extremes. The architect should certainly know, by actual practice, how to lay bricks, how to carve stone, how to do sound carpentry—he can get that knowledge at technical schools and on works in progress; and time spent in the capacity of clerk of works, under the eye of a well-informed man, will enable him to judge timber, to see that mortar is properly mixed, and to know a well-built wall when he comes across one. He cannot be architect, builder, bricklayer, stonemason, steelwork contractor, heating engineer, and craftsman in one, but he certainly should know the essential points of all these branches, for the simple reason that they all come under his direction. There is such a thing as a specification, and he is responsible for it. At the same time, he has to produce the whole design on paper. A training too one-sided produces either an architect who has a capability for design on paper, but is deficient in knowledge of the practical media through which his design becomes translated into brick and stone, or an architect who really is very well informed in matters practical but is utterly devoid of a proper sense of design. That the latter is, unfortunately, by far the more frequent, we have the houses all around to prove to us: they do not fall down through faulty construction, but their discomforting appearance defaces whole neighbourhoods. The "practical" man is chiefly responsible for this result: and the moral is obvious.

* * * *

There seems to be every indication that the line drawing will be superseded by the rendered elevation. The change will be an improvement. An ordinary line drawing such as students usually prepare in measured work has a bald, uninteresting look. It shows merely the edges of a building, and leaves one to assume the solid character of the original. But chief among its deficiencies is the absence of shadows. A cornice presupposes sunlight as much as rain; but even under a grey sky there are shadows on a building, and the absence of them on a measured elevation is a great loss to the appearance of the drawing. The French have always made a feature of rendered drawings, and the Americans, following the Beaux-Arts model so closely, are doing the same. Such drawings are, of course, no novelty in English work, but they have been few and far between. At the present time, however, the rendered elevation is making a good deal of headway in this country. We see it in the drawings done at architectural schools and on competition strainers, and, excepting the workaday sheets of office practice, we may expect it to entirely supplant the ordinary line drawing.

* * * *

It has often struck me what a superfluity of mouldings we indulge in. On a dado rail, an architrave, a panel bead, we see members galore. And the succession of them kills the effect, besides being very undesirable by providing ledges for dust to settle on. Are there not half a dozen members to the cornice moulding around an ordinary sitting-room? Yet, in effect, they are far less pleasing than a simple bead and cove. They cost money to fashion, but, curious to note, can be obtained at less cost than plain ones; all of which is, no doubt, an example in sale and demand. Multiplicity in mouldings, however, is a fault, and architects should restrain their pencils.

UBIQUE.

SOME PRACTICAL ASPECTS OF VENTILATION.*

BY A. SAXON SNELL, F.R.I.B.A.

THE movement of air is affected by so many conditions and circumstances, that it is perhaps impossible to design a system of ventilation which will automatically adjust itself at all times and under all circumstances. The most we can do is to provide the means (and they should be as simple as possible) for adjustment to meet all conditions, and to leave those occupying the building to make reasonable use of these means.

The object of this short paper is to draw attention to certain simple laws which govern the movement of the air, and to suggest that the best ventilation is secured by making the fullest use of them.

We cannot treat ventilation and heating apart; they must always be considered as two parts of one subject. Heating should be used first and foremost as a corrective to the effects of ventilation on temperature, and on occasion as an aid or stimulant to movement of air.

Cold air at the floor level and warm air above would mean for the occupants of a room cold feet and hot heads. The reverse is to be preferred, but the law of convection forbids. We can, however, effect a fairly successful compromise, by placing inlets between the top and the bottom of the room (in practice about seven to eight feet above the floor line), sheltered with hoppers to give an initial upward current to the air. The momentum of the incoming air is sufficient to direct the stream towards the ceiling, until it is overcome by the force of gravity, when it falls gently through the warmer air. In its fall, it is met by the rising warm air, through which it filters downward, absorbing in its passage a little of the heat of the rising current. It will gather more heat from the bodies of the occupants. Every such accession of heat, of course, retards the tendency to fall, and in time reverses the current.

Notwithstanding the powerful drag of an open fire, a certain part of the air will rise when its temperature is raised by contact with warm objects in the room. In larger rooms, too, it is necessary to supplement an open fire with radiators round the walls, and there also warm the air and thus lift it from the floor level; but I doubt the advantage of placing ventilating openings behind them.

Now let us follow up that part of the air which is expelled from the lungs and given off from the bodies of the occupants heated and contaminated. The law of convection causes it to rise towards the ceiling. As we have seen, the incoming fresh air in its descent absorbs from it some part of its heat, but in general not a sufficient amount to materially retard its ascent. Arrived at the ceiling, it will spread laterally, and there it would remain until sufficiently cooled by the incoming fresh air or other causes, to be carried down again towards the floor.

Now, obviously it is undesirable to allow this contaminated air to fall again, and we should have an outlet or flue at or above the ceiling level to help it to escape into the outer air.

If it is not drawn off at a sufficient rate, part of it comes in contact with the comparatively cool surface of the outer walls or windows, and as a consequence loses so much heat that the current is reversed downwards and close to the walls. Dr.

Shaw suggests that under these circumstances air outlets should be provided at the level of the window-sills. With all respect to so undoubted an authority, I cannot help thinking that in practice the system would not work. Under conditions which obtain more often than not in this country, these outlets would become inlets.

Perhaps the best method of counteracting this tendency is to have an arched ceiling, with the highest part at or along the centre, with an aspirating flue or flues at the highest part. I have adopted this system with the best results in hospital sick wards, more or less upon the lines first suggested, I think, by the French architect, M. Tenon. Even a considerable coving will help in this direction.

I have a great reliance upon an effective extraction shaft, and by *effective* I mean one which can be relied upon to act as such at all times. Only too often the ordinary short flue or the ornamental cowl either fails to act without the assistance of the wind, or it is overpowered by a more powerful draught in some other direction. A most satisfactory extraction shaft can be obtained in connection with a good and continuously used smoke flue. At Charing Cross Hospital I constructed one over 100 ft. in height along the boiler shaft, and separated from it by a thin partition, and it helped me to ventilate the basement and sub-basement storeys in an effectual manner. It will no doubt be remembered that a heated shaft of great height plays an important part in the famous system of ventilation for the Houses of Parliament.

Another method is to have cross-ventilation by openings or windows in opposite walls. With these we obtain perfilation, or a current of air travelling right across the room at a height which will not inconvenience the occupants, and which is generally powerful enough to sweep away the rising contaminated air in its course. Such currents of air are not entirely dependent on wind (indeed, air should not be *driven* across the room from one side to the other by the force of wind). They are due, I think, rather to the fact that there is always a difference in temperature (greater or less according to circumstances and aspect) between one side of a building and the opposite. It may be that the sun has warmed the walls one side more than the other at a given time, or that there is, for local reasons, a quicker movement of the air on one side or the other. Or, again, that a strong current, blowing towards the building, may cause a slight vacuum on the opposite side. But, whatever the cause, the perfilation thus secured is a valuable ally in ventilation.

The adoption of this principle in school-rooms is, at the present time, a matter of controversy; and it is perhaps well to add, that it may be easily discredited if it is not used with discretion. It would be absurd, for instance, to have windows open on both sides in a gale of wind. In such a case the lee-side should be open to a much greater extent than the windward side. On the lee-side there would be a slight vacuum, which would assist perfilation.

Schoolrooms are, in a sense, abnormal places. The area allowed to each child (in elementary schools) is 10 ft. only per scholar, and this gives 120 cubic ft., with the usual height of 12 ft. Under these conditions, and if the rooms were con-

tinuously occupied, 3,000 ft. of air per hour for each scholar would be impossible in cold weather without very serious draughts. The saving condition is that they are occupied fully for short periods only, and in the intervals of non-occupation they are, or should be, thoroughly flushed with fresh air.

Obviously it will not take long for a class of children to contaminate the air if all openings are closed, or to raise the CO₂ from .04 per cent. up to .06 per cent. With the aid of the largest area of ventilating openings which will permit the ingress of air without draught, the time would, of course, be much longer; how much longer I could not say off-hand, but doubtless it has been worked out.

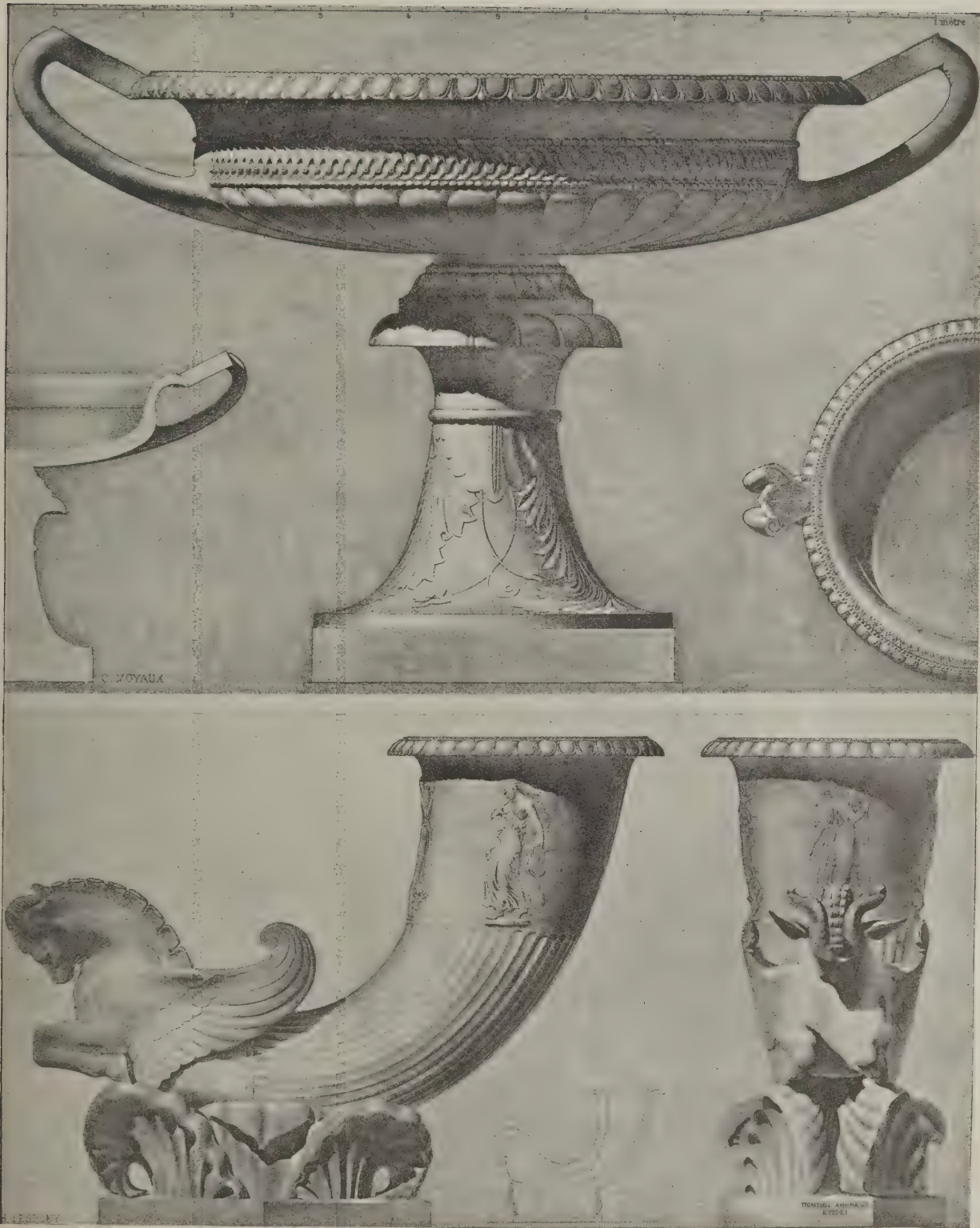
I have referred to the law of diffusion; what part, or to what extent it plays a part in ventilation has not, I think, been fully investigated. Dr. Shaw dismisses it as "a modest assistant of the more powerful convection." The late Mr. W. T. Sugg gave me, many years ago, some interesting particulars of the manner in which he made use of this law for ventilating large rooms. I suppose it is familiar to all of us, but I may describe its action briefly.

If a closed space is filled with two gases of different specific gravities, the denser will naturally sink to the bottom, in accordance with the law of gravity; but in a short time they will mutually diffuse, the heavier gas passing upward, and the lower downward, until the two are mixed both above and below the gauze. If a piece of gauze or other porous substance be inserted between the two, this diffusion will take place rapidly. Following this law, and assuming that the air inside a room is at 70 degrees and that outside at 40 degrees, if an opening is made in the wall and fitted in with gauze or any fine mesh screen, the cold air will pass into, and the hot out of, the room, and rapidly enough to give good ventilation. The fineness of the holes through which the air passes breaks up a solid stream of air outside into an infinite number of small streams inside, and so obviates draughts. Mr. Sugg told me that he had used this method with considerable success in billiard rooms and public halls. Obviously there are possibilities in the law of diffusion.

Throughout I have dealt with conditions which obtain in cold weather, but, of course, ventilation is equally necessary in summer or warm weather. It is, or should be, a much simpler matter because it is not complicated by the need of heating. On the contrary we want, at such times, to keep the air in our rooms as cool as possible. It might be interesting to discuss the effect of the physical laws we have already considered under these different conditions, but the limits of this paper forbid. I need only remind you that we have the greater opportunities of flushing out our rooms by means of widely opened windows, and I may add a hint received many years ago from an old lady, viz.: "Close the windows on the sunlit side of the house, open widely those on the shaded side; and keep the chimney flues clear."

In conclusion the author suggested that there are natural forces governing the movement of air upon which we can draw to an unlimited extent, and without cost, and that problems of ventilation will best be solved by studying these forces and making all possible use of them. He was firmly convinced that all attempts to secure ventilation by worrying and driving the air in neglect of, or in opposition of those forces, must fail in the end; or, if they succeed, it is at the expense of quality in the air.

* Extracted from a paper read at the York Congress of the Royal Sanitary Institute.



VASE AT POMPEII AND FOUNTAIN VASE AT ROME. RESTORATION BY
C. MOYAU AND H. D'ESPOUY.



SCULPTURE FROM POMPEII. RESTORATION BY G. REDON AND A. DEFASSE.



Photo: G. A. Kay.

OLD ALMSHOUSE AT ETWALL, NEAR DERBY.



Photo: L. E. Walker.

AN OLD HOUSE AT LINCOLN.



Photo: E. J. May, F.R.I.B.A.

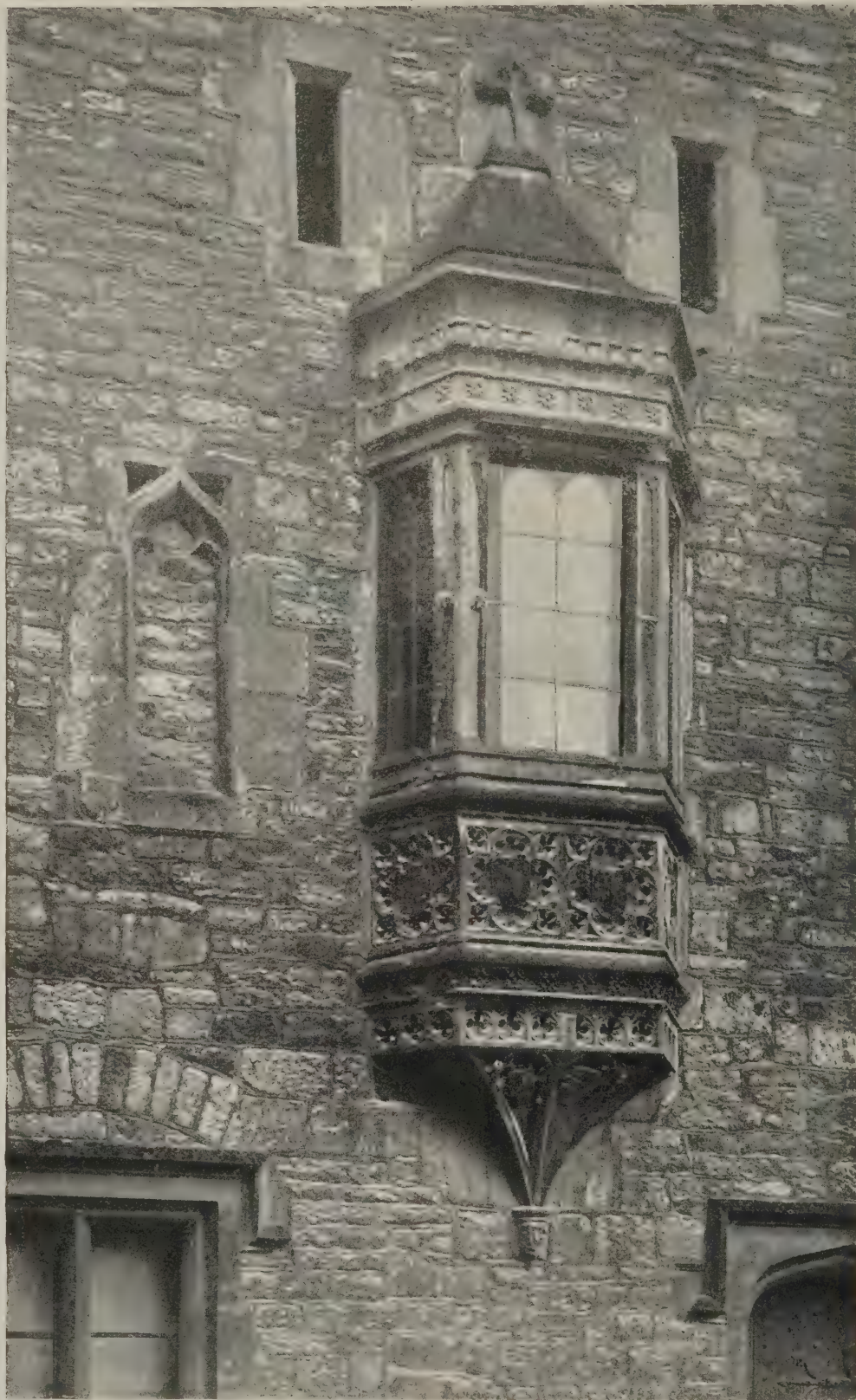
A HOUSE IN THE FISH MARKET, FOLKESTONE.



Photo: G. A. Kay.

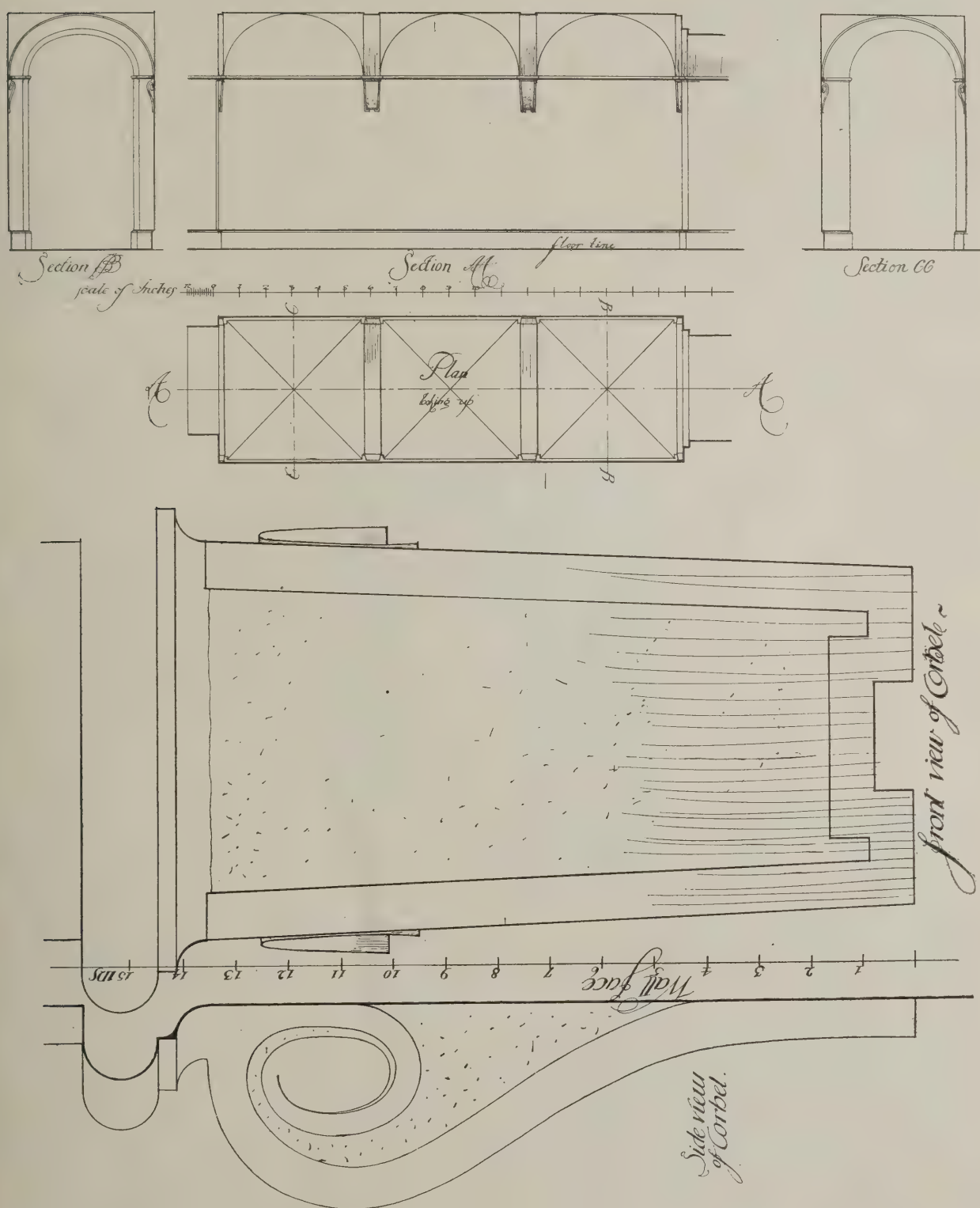
DETAIL OF BARN AT HADDON HALL.

PHOTOGRAPHS SUBMITTED IN THE HOLIDAY COMPETITION.



ORIEL WINDOW, WELLS.

This beautiful window is on a building at the entrance to the Vicars' Close.



ENTRANCE HALL, 55, LINCOLN'S INN FIELDS, LONDON. MEASURED AND DRAWN BY J. M. W. HALLEY.

TWO BOOKS ON COMPANY WORK.

In spite of the recent bad times, "the investing public" no doubt still includes many architects and other members of the building industry, and therefore it is not inappropriate to notice in these columns the issue of a really useful little book on "Company Transfer Work." Not only to investors does the book appeal, but also, and still more forcibly, to those officials and others who are actively engaged in company business. The author, Mr. J. A. White, who is assistant secretary to the Associated Portland Cement Manufacturers [1900], Ltd., approaches the subject from the practical side, and the guidance he gives is derived from many years' actual experience of company work, while the valuable specimen forms and rulings he reproduces in the appendix have been proved efficient in practice. In its eminently practical character—dealing as it does explicitly with the many details of business routine involved in the correct observance of the requirements of the Companies' Act—such as application for and allotment of shares, keeping the share register and transfer books, preparing and issuing certificates, registration of documents, payment of dividends, etc.—this book offers a manifest and material advantage as compared with the manuals that are written exclusively from the purely legal standpoint, and to these it affords at least a most valuable supplement. Mr. White is to be heartily congratulated on his skilful marshalling and clear exposition of data that in less experienced hands too easily lend themselves to complication and obscurity.

A second and revised edition of "Company Management" needs no further commendation than that implied by the success which it has obviously achieved. This also is, after its kind, a thoroughly practical manual, and, taken in conjunction with Mr. White's book, will provide the company official with a complete equipment.

"Company Transfer Work." A Practical Guide to Share Registration and Transfer Work. By J. A. White, Assistant Secretary to the Associated Portland Cement Manufacturers [1900], Ltd. London: Effingham Wilson, 54, Threadneedle Street, E.C. Pages viii. + 108, 8½ ins. by 5½ ins., price 2s. 6d. net.

"Company Management." A Manual for the daily use of Directors, Secretaries, and others, in the Formation and Management of Joint Stock Companies, etc. Second Edition, revised. By H. C. Emery, Solicitor, etc. Same publishers. Pages xii. + 278, 8½ ins. by 5½ ins., price 5s. net.

PROPOSED TWO-MILE BRIDGE FOR
THE MERSEY.

A revival of the idea of building a bridge over the Mersey at Liverpool is arousing considerable public interest. Apart from the railway tunnel, the traffic, both passenger and goods, between Liverpool and Bootle, on the Lancashire side, and Birkenhead and the new burgh of Wallasey on the Cheshire side, representing a total population of over a million, is at present carried by ferries.

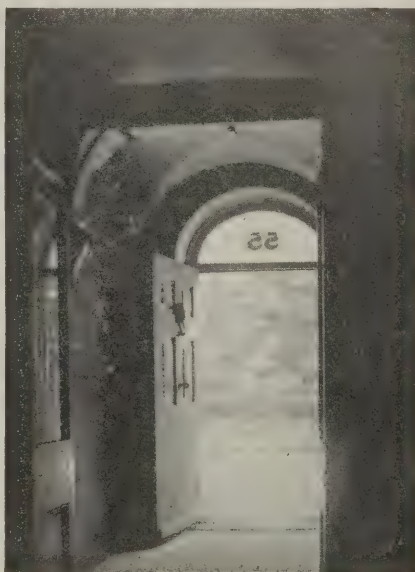
Particulars of a former scheme designed by prominent experts, including Mr. John A. Brodie, the present City Engineer (who recently visited India at the invitation of the Government to superintend the laying out of the new capital at Delhi), which found much favour with the local public men at the time it was put forward, have been recently republished, and from these it appears that the proposal was for a suspension bridge, which it was believed would be the most economical, would obstruct the river traffic less, and be much more

graceful in appearance than any other type. It was proposed to cross the river in three spans, a central one of 2,000 ft., and two side spans of 1,000 ft. each. The bridge would be nearly two miles long, and by gradient reach a height in the centre of the river of 150 ft. There were also to be approaches for heavy traffic, while auxiliary hydraulic lifts would be provided near the docks on either side of the river. The total necessary capital for the completion of the scheme was estimated at £2,714,750. The bridge was to take five years to build.

DETAILS OLD AND NEW.—LII.

Hall or Vestibule at 55, Lincoln's Inn Fields.

A little while and the last of that group of houses on the west side of Lincoln's Inn Fields, built from the designs of Inigo Jones, will have disappeared. They were very plain and unpretentious, but our interest in them lay in the fact that they were the earliest examples of a street architecture which, in a manner, has spread over the civilised globe. Our regret at losing them would be lessened if there was any hope of getting anything good in their place. Judging from the

ENTRANCE HALL, 55, LINCOLN'S INN
FIELDS, LONDON.

new buildings scattered up and down the "Fields," that hope is vain. Although the old buildings were plain and unpretentious, they possessed many delightful interior fittings. The vestibule or hall of No. 55, here illustrated, is a fair example. It is covered with a very simple intersecting vault, turned to the shape of an elliptical arch, in three square bays. A plain rib, which springs from a curious bracket, separates them. It will be noticed at once that the door is not on the axis of the vault, also that the effect—the play of curves caused by this—is not unpleasant. The apotheosis of the plasterer makes it increasingly difficult to do plain plaster work in vault or ceiling; and it is certain that half the municipal corridors, with their overloaded ribs, their bulging enrichments, do not compare favourably with this plain and unadorned vaulting. It is difficult to make people realise the beauty of abstract forms, when they can have the concrete elaboration of the thoughtless.

LONDON ASSOCIATION OF MASTER
DECORATORS.

A meeting of the Executive Committee of the above Association was held at 92, Queen Victoria Street, London, E.C., on September 9th, Mr. T. S. Rowden in the chair.

Messrs. Anderson and Wilkinson were elected as the delegates of the association to the Convention of the National Association; and Messrs. Anderson, Andrew Campbell, Honeychurch, and Wilkinson were elected to represent the Association on the Council of the National Association.

It was resolved that the general committee meeting should be held on October 14th next, at 6.30 p.m., the general meeting being held on the same evening at 7.30 p.m.; and that the annual dinner should be held on the following Thursday, October 17th, at 7.30 p.m.

The Secretary said the Committee had finished all the subjects that had been brought forward, with the exception of the question of the L.C.C., the workman's certificate of discharge, and Mr. Campbell's form of instruction, all of which would come before the General Committee.

Mr. Anderson stated that he would bring before the next General Committee a letter from the Brixton Trade Day School. There was also the suggestion that more than one Vice-President should be elected. It was agreed to defer the discussion until the next general meeting.

Mr. Honeychurch thought that two Vice-Presidents would be sufficient.

A letter from the Paint and Varnish Society suggesting a joint meeting on the second Thursday in March was announced, and this subject also was referred to the next general meeting.

PRESERVING ORKNEY MONUMENTS.

For some time past Mr. J. Wilson Paterson, architect to the Board of Works, Edinburgh, has been engaged in the task of preserving the ancient monuments of Orkney, which were fast falling into ruins. The Standing Stones of Stennes have already been restored, as far as possible. Those still remaining are now in a thoroughly sound condition. The walls of the old church at Egilshay have been pointed, and the tops made waterproof, so that decay has been arrested. The Gallery Grave or earth dwelling at Grambank, near Kirkwall, has been protected by railings. The surface has been dug away above the chamber, and the place puddled with clay, so that it is now perfectly watertight. A crib has been set up outside, and covered over with turf, so that visitors can see the passage to the chamber without going below. Noltland Castle, in Westray, is being dealt with in stages. All dangerous parts are being repaired, so that the walls are now safe, having been made waterproof on top. The building has also been enclosed. St. Mary's Church, Pierowall, Westray, has been made good in the same way, and all the accumulated rubbish cleared off the ground. The old church at the west side of the island of Westray, which is even older than St. Mary's, has also been partially restored. The work of preserving the ancient Bishop's Palace at Kirkwall, supposed to be over 800 years old, where Hacon, King of Norway, died after the disastrous battle of Largs, has now been commenced. The Earl's Palace, Kirkwall, is also to receive attention this year.

THE DOOM OF HISTORIC HOUSES.

Yet another fine old mansion has offered the fate that is too stoically accepted as the common end of its kind. Carden Hall, Cheshire, was, on September 16th, destroyed by fire. Priceless pictures, rare old furniture, and much jewellery, were annihilated, and, while it might be stated by reporters that "the damage, estimated at £60,000, is covered by insurance," the plain fact is that the aesthetic loss, as to the building and as to its contents, is simply irreparable. Men of business, when urged to adopt modern means of fire-prevention, commonly reply, "Oh, it's all right; I'm fully insured!" Of course, they are deceiving themselves; because insurance does not invariably meet such contingencies as are involved in the suspension and dislocation of business consequent on a fire. When a business has been burnt out, prosperity cannot always be resumed in the new premises as if nothing had happened to interrupt it. Clients go elsewhere and see no sufficient reason for returning. Then the "fully insured" fallacy does not allow very free play to the imagination—or, let us rather say, to the imagination—for it shows too little regard for the adjoining neighbour, and does not duly take into account the life-risks that may be said to be imminent after every fire. Fire prevention is a plain duty, incumbent upon every member of the community who has any kind of influence in the matter, and the man who neglects it on the plea that he is "fully insured" cannot be regarded as a high type of citizen; he falls short of real prudence in his own concerns, and has too little regard for the interests of his neighbours.

"Insuring Against Fire."

The owner of a venerable country mansion is under a peculiar obligation to insure it against fire, not merely in the commonly received and perverted sense of the words, which are taken to mean nothing more than taking out a policy, but in the truer sense of taking every possible pre-

cautionary measure to prevent the building taking fire. He is the custodian of an inheritance which he ought to, and would like to, transmit unimpaired to posterity. When, in such a case, fire destroys the monumental building and its cherished contents, the owner is naturally apt to be overwhelmed with the sense of an irreparable loss for which no amount of insurance money can afford relief; he may be "compensated," but cannot be consoled. Nevertheless, it is to be feared that the owners of ancient manor houses, and the like—which surely ought to be scheduled in the Act for the Preservation of Ancient Monuments—while perhaps exercising every common-sense precaution against fire, do not take such measures as an expert would suggest, and are in most cases unaware that anything further can be done; ignorance on such matters being so general as to be almost excusable. Then, again, the very age of a building may give a sense of false security. It has lasted for centuries without catching fire; why should not this immunity continue? But the older the building, the greater the fire-hazard. The woodwork, which is commonly very plentiful in such buildings, becomes progressively more inflammable; some of it, under hearths or over fireplaces, may, by the undetected falling away of brick, stone, or plaster, become exposed to sparks or actual flames, and may be smouldering undiscovered for days before the actual outbreak occurs. The necessity for periodical examination of such houses by a competent fire-expert is therefore perfectly obvious. The fire-insurance examination is not what is meant, but something more special, and more thorough and penetrating. In the case of buildings that are clearly ancient monuments, whether or not they come within the meaning of the new Act, efficient and systematic examination for fire risks should be made compulsory, and where the Englishman's house happens to be literally as well as figuratively his castle, the intrusion would not be so bitterly resented as it might be lower down the scale.

Noblesse oblige; and it is a point of honour to see that the castle is not yielded too easily to its most destructive enemy.

Fire-Resisting Half-Timber Work.

Carden Hall, it was stated in the first reports of the fire, was utterly destroyed. Judging from the accompanying photographic view, the case was perhaps a little exaggerated, as it is evident that much of the remarkable half-timber work was left standing, and is apparently capable of restoration. Nothing is left, however, but the walls, and the manner in which these have withstood a fire so fierce that it is said to have melted gold coins may possibly surprise those who are unacquainted with the fire-resisting qualities of brick and timber structures. If it is intended to preserve as far as possible the original appearance of this sixteenth-century house, perhaps it may be possible to use the grouting machine with beneficial effect. We are not aware whether the machine has been tried in any similar instance, but seeing how successfully it has been employed for the consolidation of walls that had become unsound through age, it would seem probable that those rendered unsound by fire might be similarly treated with equal advantage, although we are not sure whether the system could be adapted to brick walls, in which coursing and texture might present insuperable difficulties.

Is the Modern Fireplace at Fault?

It is bad enough, writes Mr. Cloudesley S. Willis, to have to add Carden Hall to the long list of ancient houses that have been destroyed by fire during recent years, but it is much more disturbing to realise that other buildings are also doomed. Yet the jeopardy of lives and ruin of old craftsmanship will continue until it is understood that the modern fireplace, when improperly fixed, is an engine of destruction. If the present standard of comfort demands these additions, the guardians of old buildings should at least satisfy themselves that the structural conditions are suitable. It is not



Photo: Topical Press.

CARDEN HALL, CHESHIRE, AFTER THE FIRE.

sufficient to build a fireplace with brick-work, but a rigorous search must be made for unprotected woodwork that may be subjected to heat.

It should be understood that in former days the builders used the chimney stacks as piers to support the wooden beams. They employed wooden bearers for the arches of the chimneys, and often laid the hearthstones directly on the joists, instead of trimming the joists round the stones, as the practice now is. So long as dog-grates and hob-stoves continued to be used, this system was comparatively safe, as the fires were raised well above the hearths and the air circulated below and above them, whilst the wide chimneys secured the upward passage of air at a relatively low temperature. But in most new fireplaces the heat is concentrated either on, or just above, and frequently below, the level of the floor; moreover, the throat of the chimney is contracted, so that the gases pass up at a high temperature, and thus, where proper precautions are neglected, the heat is conveyed to the woodwork, and an outbreak of fire is the result.

These disasters are usually vaguely attributed to "an overheated flue." If fire insurance offices would circulate a card, that could be hung up, drawing attention to this, they would not only assist in saving life and property, but their own money as well. No modern fireplace should be fixed or allowed to remain in any old building unless a most strict and satisfying examination has been made by a competent person, not only in the room itself, but in the apartment immediately behind the chimney, where the skirting board, for example, frequently is found to be scorched. Where these conditions cannot be satisfied, it is far safer to be contented with a dog-grate or hob-stove, which is usually beautiful to the eye and adapted to the structure of the house.

THE SCHOOL OF ART WOOD CARVING.

We illustrate on this page an example of work done at the School of Art Wood Carving, 39, Thurlloe Place, South Kensington. This was executed by a London County Council trade scholar during his three years' course, and, as indicating the practical character of the instruction given at the school, it may be mentioned

that the scholar in question has since passed into the London wood carving trade. The school is now open after the usual summer recess, the day classes being held from ten to one and two to five on five days of the week, and from ten to one on Saturdays; while the evening class meets on three evenings a week and on Saturday afternoons. Some of the free studentships in the evening classes, maintained by means of funds granted to the school by the London County Council, are at present vacant, and forms of application for these, as well as any further particulars relating to the school may be obtained from the Secretary, at the address given above.

The school is under the direction of a Committee of Management, which includes many well-known names, and the teaching staff comprises eight qualified instructors.

PROPOSED NEW MUNICIPAL OFFICES FOR PORTSMOUTH.

A long-discussed proposal to establish a Museum and Art Gallery in the centre of Portsmouth, and provide in connection therewith central offices for the Corporation Electric Light Department, improved accommodation for the Health Department and the overseers, an enlarged fire station, and other needed headquarters is now taking definite shape. There have been two schemes before the Corporation Committees concerned. One is virtually put out of court by reason of the present poverty of the borough's finances, for it involves the purchase of much small property in Park Road. The alternative proposal, however, is meeting with general support. It favours the removal of the Corporation stables from Park Road and the erection of a three-storey building on the site. As to the stables, decentralisation is being considered. The removal to the Anglesey Road depot of the Drainage Committee's stabling and the workshops in which carts are made and repaired, and the provision of other stabling at the Eastney and Baffins destructors, are the suggestions put forward. Many advantages and some eventual economy would result from the adoption of such a scheme, and, if the different Committees concerned present it in agreement, the Council's sanction, it is anticipated, may be taken as a foregone conclusion.

ST. VEDAST'S AND THE TRAFFIC PROBLEM.

With respect to the threatened demolition of the church of St. Vedast, Fost Lane, E.C., to which reference has been made in our issues of September 11 (p. 278), and September 18 (p. 317), Mr. W. H. Seth-Smith, F.R.I.B.A., has addressed to the "Times" a letter in which he considerably widens the scope of discussion.

"The obliteration of the view of Wren's beautiful little church (he writes) by the extension of the General Post Office buildings in St. Martin's-le-Grand is a matter sad enough to contemplate, but is insignificant compared with the urgent subject of the City traffic.

"The City Council and all other authorities concerned are anxiously alive to the serious and pressing problem created by the congestion of traffic in the Mansion House area.

"The financial loss to the community by the blocking, during the busiest part of the day, of the main artery of London at this vital and central point represents a very large sum of money which should be spent on its relief. The principal cities of Europe and America would long ago have faced and solved the problem in spite of its cost. Paris has recently voted £36,000,000 for the improvement of her main thoroughfares. London, however, is handicapped by her multiplicity of highway authorities, but is without any body possessing the power to enforce the recommendations of the traffic branch of the Board of Trade and the London County Council, dealing as they do with street improvements of vital import to the seven millions of London. The creation of such an authority is of primary and immediate importance; but meanwhile the Government should be urged to postpone that part of the Post Office rebuilding which would permanently block the west end of the suggested new road providing a short cut to Liverpool Street and Bishopsgate from St. Martin's-le-Grand.

"Some such street would seem to be an absolute necessity, and would, incidentally, open up a view of St. Vedast's Church, and, at the same time, help to form a small square for the circulation and distribution of the traffic at the intersection of Newgate Street, St. Paul's Churchyard, Cheapside, and Aldersgate Street. It must not be forgotten that the new St. Paul's Bridge and its continuation over the widened space to the east of St. Paul's Cathedral will bring a great accession of traffic from the south of London to this point.

"A brief glance at the map accompanying the London Directory will show a man who care to learn that there is now practically no alternative to the Mansion House route from west to east. All the other streets to the north are narrow lanes, and, at the busy hours of the day, are choked by slowly moving or stationary trade vehicles, and the only southern route, *via* Cannon Street and Gracechurch Street, is already badly overcrowded."

We have repeatedly urged the necessity for setting up a central authority to deal with the street traffic problem, which is daily becoming more difficult; but unless this body were properly constituted, comprising a sufficient number of those who were anxious and able to safeguard aesthetic interests, the proceeding would be certain to involve many regrettable incidents.



CARVED FANLIGHT EXECUTED AT THE SCHOOL OF ART WOOD CARVING.

ARCHITECTURAL STUDENTS' SECTION.

A NEW FEATURE.

realising, from the many letters we receive, that large numbers of architectural students need help and guidance which they are not in a position to obtain elsewhere, we have decided to set aside a certain amount of space in which their educational interests will receive special consideration. With this object we have enlisted the sympathies and the services of an architect who is eminent both professionally and as an educationist, and he will be pleased to render all possible counsel to architectural students who require skilled direction in their studies. It must be distinctly understood that the questions with which he is prepared to deal must be confined to architectural education and the subject of design. Mere details of construction, or any other matters which could be settled by reference to the ordinary text-books, will not be entertained.

Below are given answers to two inquiries which we have received during the past week and which, being of a similar character to many others that reach us, have prompted the allocation of a certain amount of space in each issue to the consideration of students' difficulties.

Preparation for the new R.I.B.A. Final.
C. L. (Bolton) writes: "Can you tell me the best way of preparing for the new Final Examination R.I.B.A.? I have passed the Intermediate, and am serving articles in an office in this town. For the Intermediate I joined correspondence courses, but there do not seem to be any such classes which would help me to prepare the four testimony of study designs now required."

The new Final Examination, and particularly the new testimonies of study in design, have been started with the express object of inducing individual work in design. After all, designing should be the main life-work of an architect, and it is therefore only logical that the Institute should ask for evidence of continued practice in it before granting its membership.

Facility in design can best be acquired in a school where a number of students are working out the same problem. The student learns as much from the designs of his fellows as he does from his own, he sees the standard required and obtainable, and he has the further advantage over the student working by himself of the expert criticism of his teachers. No doubt the best schools of architecture recognised by the Institute in England—the Architectural Association School, King's College and University College Schools in London, and Liverpool, Manchester, and Sheffield University Schools in the country will in future make these Institute problems in design part of their regular course. At present the Architectural Association School in London and the Liverpool School seem to have done most in this direction. The Liverpool School has arranged a special certificate in design to be taken in one year for men who have had some experience of office work and who wish to join the school to get these testimonies completed. Already a large number of students of this school have had their testimonies approved by the Institute. This journal is proposing to publish a series of approved testimony

designs from all over the country and it will make a start with some of the Liverpool ones.

One year's course in any of the schools of architecture should enable a student to get his four testimonies drawn and accepted, as well as his larger thesis design, if he takes design as his thesis subject.

In towns where there are not yet schools of architecture where design is taught, or where students for some reason or other cannot join such schools, a group of them would do well to join together in the French and American atelier manner. This simply means hiring a large room for the evenings and working together at the same problems. Such a group of half a dozen men would make much greater progress, so it has been proved over and over again, by their mutual help and by the enthusiasm which working together naturally evolves, than if each had spent twice the time in his home or lodging at private work. Another advantage of this group or atelier system is that it would be easy when the group is formed to persuade the best architect in the town to visit the atelier at intervals and criticise the designs.

After next year, when the production of these designs becomes compulsory, we shall have a thousand or more students scattered throughout the country working at them. The competition between school and school and atelier and atelier, if such are formed, will be one of the most stimulating features of this new system of designs, and it is calculated to do more for training architects in their art in a couple of years than the old examination system of the Institute has done in the last twenty.

Exemption from the Preliminary Examination R.I.B.A.

T. N. A. writes: "Can you inform me whether it is possible to get an exemption from the Preliminary Examination of the R.I.B.A.? I know of a number of young fellows who, like myself, have forgotten their school work, and who, while keen to work for the Intermediate, find the Preliminary a stumbling-block. Your counsel in this matter would be esteemed a great favour."

—Exemption is granted by the Board of Architectural Education from the Preliminary Examination to applicants who submit satisfactory drawings and certificates from well-known educational bodies. The Board has in the past interpreted this latter phrase in a very liberal way. It has accepted on their individual merits letters from head masters of good schools testifying to the standard of general education reached by the applicant. This standard has generally been assumed to be that of the fifth form of a Public School. A student wishing to rise eventually above the level of an assistant should obviously have had a good general education, including the knowledge of at least one foreign or dead language. He should be able to express his opinions in clear grammatical English, and, in view of modern construction, should have some knowledge of mathematics. The Preliminary Examination itself represents these things at rather a low than a high standard, but with registration ahead there is no doubt it will be raised in the near future.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

The Prevention of Corruption Act.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—It seems, from inquiries which have reached me, that the provisions of the Prevention of Corruption Act, which forbids, under heavy penalties of fine or imprisonment, the asking for, or receiving, the offering, or giving, of bribes or secret commissions, are still unfamiliar.

Many persons in the architectural and allied professions appear to be equally unaware of the existence of the Secret Commissions and Bribery Prevention League, Incorporated (president, the Right Hon. Sir Edward Fry, G.C.B.), which was formed to enforce the Act, to advise, warn, and, if necessary, to prosecute, and has a large and influential membership.

If any of your readers desire any information which it is within my power to give, I shall be glad if they will communicate with me.

THE SECRETARY OF THE
SECRET COMMISSIONS AND BRIBERY
PREVENTION LEAGUE, INCORPORATED.
3, Oxford Court, Cannon Street,
London, E.C.

VITREOUS TILES AND MOSAIC.

An attractive catalogue has the advantage that it not merely pleases for the moment, but is nearly certain to be preserved, and to be repeatedly looked through, because every time one sees it there is a renewal of pleasure. Such a catalogue is that in which Messrs. Chance Brothers and Co., Ltd., of Smethwick, near Birmingham, have issued. In this, by a deft application of the three-colour process, the artistic effects that can be obtained by the use of their vitreous tiles and mosaic for walls, floors, ceilings, and fireplaces are convincingly shown. The material being solid glass, no crazing can occur, and as it is, of course, non-absorbent, and is, moreover, unaffected by acids, it can be freely exposed to the weather, and is therefore as applicable to exterior as to interior decoration. Half a dozen coloured plates show arrangements of regular-edge or rough-cut edge tiles in dados for bath-rooms, lavatories, staircases, etc., wall decorations for entrance halls, forecourts, restaurants, etc.; fireplace surrounds, jambs, and hearths. A further half-dozen plates illustrate various applications of vitreous mosaic, which is manufactured in 1-in. and $\frac{3}{4}$ -in. cubes, as well as in irregular-shaped tesserae for centres. Many designs, beautiful both in colour and in pattern, are shown of vitreous mosaic floors for entrance halls, verandahs, corridors, aisles, chancel floors and steps, and other church work, and there is a page full of alternative designs for borders for mosaic floors and for dado bands. It is further shown how happily the material lends itself to the construction of durable fascias, signs, and advertisement tablets. Messrs. Chance Brothers claim that the material is harder than marble or ceramics, that it is non-slippery even though wet, is extremely durable, and comparatively inexpensive. The catalogue includes, in addition to numerous coloured plates, some notes of much practical interest on cutting and fixing vitreous tiles.

ARCHITECTURAL AND BUILDING
TRADES CLASSES.*The L.C.C. School of Building.*

The London County Council, in erecting their School of Building, Ferndale Road, Brixton, had as their object the improvement of the educational facilities for the building trade by establishing a separate school devoted to one industry alone, so as to specialise and concentrate effort. The school is different from any other institution in the kingdom, and has been so successful that it is receiving world-wide attention among educational authorities. Since it was established in 1904 it has been steadily developing, and its methods are original in many ways. So far as comprehensiveness of scope and thoroughness in its own industry are concerned, the only other institution fit to rank with it is the Royal Technical High School at Charlottenburg, Berlin, in its building sections (which, by the way, form the larger part); for which reason London's School has been called "The English Charlottenburg."

Four years ago a Day Technical School for Boys was established at the L.C.C. School of Building, having for its object the provision of a sound scientific and technical training for those preparing to enter the building trades and allied avocations, admission to the school being restricted to boys between thirteen and fifteen years of age. The fees are extremely moderate, and a number of scholarships tenable at the School of Building are awarded among the students of the London County Council's elementary schools. The curriculum includes history, geography, chemistry, physics, and mathematics; but these subjects are all given a bias in the technical direction, the history having special reference to industrial changes and the development of public and domestic architecture, while the geography, the chemistry, and the physics have special reference to building materials, and the mathematics apply to the mechanics of building.

To give a practical turn to their studies, the students have erected a small cottage situated in the large hall at the school, the architectural students preparing the working drawings for it, and the artisan students constructing it. So keen was their interest that difficulty was found in getting them to leave off work at dinner-time and at the end of school hours; while it was amusing to observe how the boys imitated the little peculiarities and the habits of workmen which they had noticed in actual building operations, even to chalking up a notice, "No more hands wanted," and displaying a regulation builder's signboard above the hoarding. It has been found that employers have been eager to secure the services of scholars who have completed their studies, and all have been placed out to good advantage.

So great a success has been this department, that the policy is to be extended in the current session, which began September 23, by the establishment of a Senior Day Technical School to provide instruction for students whose age and previous education are above the age and standard of education required for admission to the Day Technical School for Boys.

In the evening classes at the School this next session several improvements will also be effected. The work of the school has been divided into five sections, namely, (1) Trade Subjects, (2) Building Construction and Allied Subjects, (3)

Surveying, (4) Structural Engineering, (5) Architecture and Drawing. The third and fourth sections are newly created this year. The Structural Engineering section is an interesting departure, as its establishment now renders the school completely on a par with Charlottenburg, where "Bau-Ingenieurwerk" has for long been a large and important section. The City and Guilds of London Institute recently promoted an examination in Structural Engineering, and the Concrete Institute has also decided to hold an examination therein. The school is equipped with testing appliances, machinery, tools and apparatus for practical work. Several new testing machines have been installed this summer ready for next session. The course in Structural Engineering is a very complete one, including, in addition to steelwork, reinforced concrete and masonry structures, instruction in heavy timberwork, fire-resisting construction and fire-prevention, and architectural acoustics. The specialist lecturer for these subjects is Mr. H. Kempton Dyson, secretary of the Concrete Institute, who is assisted by Mr. R. Graham Keevill, A.M.I.Mech.E., M.C.I., and Mr. A. E. Crabbe.

Northampton Polytechnic Institute.

The annual programme of the Northampton Polytechnic Institute, St. John Street, London, E.C., has become a substantial volume of 308 pages. The eight departments into which the educational activities of the Institute are divided include several in which subjects that relate more or less directly to the building industry are represented—for example, there are departments of electrical engineering and applied physics, of artistic crafts, and of technical chemistry; while instruction in carpentry is given in the section of "miscellaneous trades." Surveying and levelling are taught in the Mechanical Engineering Department, which also includes lectures on the strength and elasticity of materials, and on reinforced concrete. A wood-carving class is adapted to the requirements of apprentices and craftsmen in the wood-working and furniture trades. Clock-making, of course, looms large in a syllabus coming from Clerkenwell, and the fact is here noted in view of the increasing interest which architects are showing in clocks. The already excellent equipment of the Institute has been further extended and improved, and additions have been made in most of the departments. The principal of the institute is Dr. R. Mullineux Walmsley.

Central School of Arts and Crafts.

Architecture and the Building Crafts are represented at the London County Council Central School of Arts and Crafts, Southampton Row, W.C., the section of architectural design and drawing being under the charge of Mr. S. B. K. Caulfield, F.R.I.B.A., who is assisted by Mr. S. Woods Hill, A.R.I.B.A. Individual teaching in architectural design is given, and there are lectures and demonstrations in Structural Mechanics and Building Construction. For students taking elementary design there are lectures on "The Growth of a House," and a museum class meets on Saturday mornings and afternoons. The curriculum includes a course of twelve lectures by Mr. P. J. Waldram, F.S.I., on structural mechanics, a subject that has assumed increased importance since the Board of Architectural Education of the Royal Institute of British Architects have called attention to the necessity for more

thorough knowledge of it on the part of those seeking admission to the Institute. The other departments of the school are: Cabinet Work and Furniture; Silver-smith's Work and Allied Crafts; Book Production; Drawing, Painting, Design and Modelling; Needlework and Embroidery; Stained Glass, Mosaic, and Decorative Painting. The Royal Female School of Art is incorporated with this institution.

Borough Polytechnic.

The Borough Polytechnic, 103, Borough Road, London, S.E., has an Arts and Crafts Department which includes, besides "general art work," instruction in plain and ornamental lettering, and in modelling. There are also classes in Architecture, Building Construction, Sanitary Science, and Technical Drawing for Builders. In the course of architecture the lecturer is Mr. H. V. Milnes Emerson, A.R.I.B.A., M.S.A., and Mr. Nandy Hoskins, M.R.San.I., the lecturer in Sanitary Science. Classes are also held in Carpentry and Joinery, Bricklayers' Work, Masonry, Plastering Work, Plumbers' Work, and Building Quantities. The principal is Mr. C. J. Millis, M.I.Mech.E.

City Companies' Building Trades Training Schools.

The new session of the Trades Training Schools promoted by several of the City Companies, at 153, Great Titchfield Street, has been signalled by a conversation given by the Carpenters' Company in its hall, London Wall. The companies who share the credit of promoting the schools with the Carpenters are the Joiners, the Painter Stainers, the Plasterers, the Tyle and Bricklayers, and the Wheelwrights. Mr. Spencer W. Morris, Master of the Carpenters' Company, received the guests and Mr. H. Phillips Fletcher, F.R.I.B.A., director of the schools, delivered a brief address.

OUR PLATE.

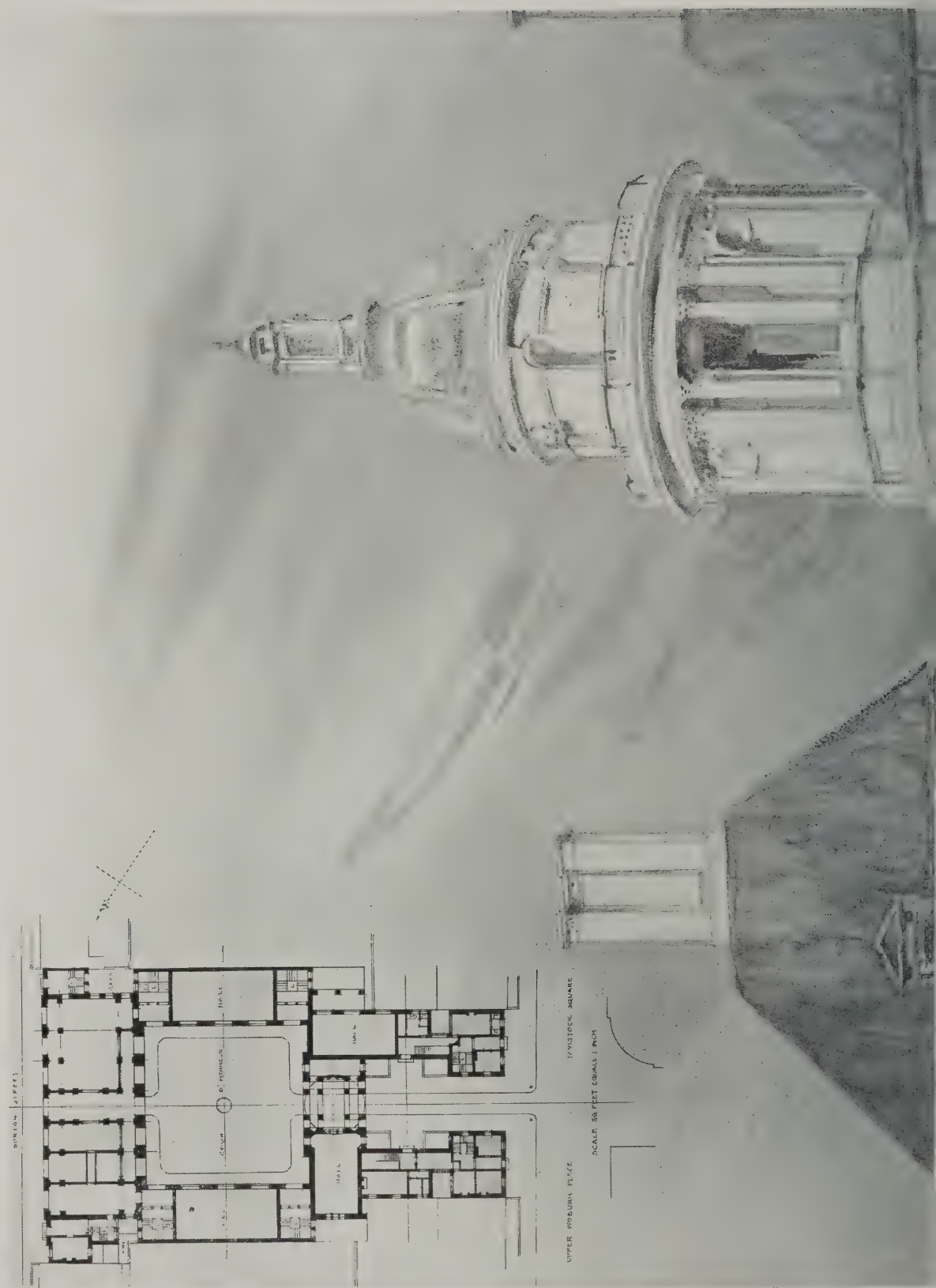
London Headquarters for the Theosophical Society.

These buildings, shown on the Cent Plate in this issue, are to be erected on site which extends from Tavistock Square to Burton Street—a depth of 270 ft., with an extreme width of 172 ft. The main entrance to the building is by way of carriage-drive from Tavistock Square through the archway leading to a central court. On the north, south, and west sides of this court are arranged three large halls. The east side, with frontage on Burton Street, is reserved for the general offices of the society. Here also, on the first floor, is a large hall for the society meetings, 128 ft. long by 50 ft. wide. The central dome over the entrance archway surmounts the library, which is on the first floor. The upper floors of the buildings are devoted to spacious flats. The work is already under construction, and the whole is to be faced with Portland stone. The architect is Mr. E. Lutyens, F.R.I.B.A., of Westminster.

London Builder's Gift to His Native Village.

Mr. Howell J. Williams, L.C.C. builder, of Camden Town, has presented to his native village, Corris, Merionethshire, an institute which has cost £3,000 and the donor has also made provision for its endowment. The architect is Mr. B. M. Roberts, Portmadoc.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, September 25th, 1912.





DESIGN FOR HEADQUARTERS OF THE THEOSOPHICAL SOCIETY, TAVISTOCK SQUARE, LONDON, W.C. E. L. LUTYENS, F.R.I.B.A., ARCHITECT.
(Royal Academy Exhibition, 1912)

THE ARCHITECTS' & BUILDERS' JOURNAL.

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(From Piranesi.)



Photo: A. J. Loughton

THE NEW SOUTH TRANSEPT AT SELBY ABBEY. J. OLDRID SCOTT, F.S.A., F.R.I.B.A., ARCHITECT.

(See page 349.)

THE ARCHITECTS' & BUILDERS' JOURNAL.

OCTOBER 2nd, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 924.

Architecture and the Spirit of the Age.

It is a well-worn commonplace of the history books that architectural character is a reflection of the spirit of its age—the gloomy despotism and overpowering superstition of Karnak, the sunny democracy and delicate virile logic of the Parthenon, the hard but gorgeous symmetry of the Roman Fora, the religious exaltation and restless energy of the mediæval cathedral, the noble humanity and the secular splendour of the Renaissance palace—there is no need to labour the appropriateness of each. In England to-day it is not difficult to see in the failure of our great public buildings, and in the fussy tedium of our streets, a reflection of the fact that we have not yet learnt the polite art of dwelling, in the way that, for example, our neighbours the French have; on the contrary, the comfortableness and quietness of our domestic architecture, as compared with theirs, shows us to be a superior race of country dwellers. Finally, to push the reflection theory a step further, the English country house of to-day, with its affectation of studied rusticity, clearly indicates the difference between the country gentleman of the twentieth century and his more cultivated great-grandfather of the eighteenth; it is, in fact, the contrast between a house by Robert Adam and by Mr. ———.

But more interesting, because more perplexing, are those periods during which architecture appears to be pursuing a line of development austere apart. The Louis XVI. period is one that readily suggests itself as an example of this contrary condition. No one could honestly attempt to show that the work of Gabriel and Antoine, with its refinement, purity, and strength, was typical of its frivolous, shallow age. But by a curious chance we have left to us, in the garden design of the period, an exact reflection of its childish weakness; under the safe cover of the Anglo-Chinese style (a conjunction calculated to produce the craziest spring) the landscape architect could pander to his client's most foolish caprice. The exquisite little *château* of La Bagatelle and the collection of absurdities that formed its garden, including a Tomb of Pharaoh, a Chinese pagoda, an Indian pavilion, and a hermitage, thrown together by an obscure Scotsman, exemplify more acutely than anywhere else the gulf between the architecture and the age; the garden is contemporary, the house is emphatically not of it. It is interesting to speculate on the means by which those Louis XVI. architects forced their architecture on their allow clients; their *esprit de corps* must have been singularly strong, for, so far as we know, there is not a single instance in which they gave way and frankly yielded to the prevailing folly.

More perplexing still is the case of the United States of America. An English architect visiting the States and being shown the work of Messrs. McKim, Mead, and White, Carrère and Hastings, Cass Gilbert, John B. Brunner, and others, is apt to come back especially if he has experienced some of America's noble hospitality) with a conviction that these build-

ings represent a nation which appears to combine the wealth and magnificence of Rome with the culture and refinement of Greece. As the glamour begins to wear off, and particularly if he chance to read such an article on America as appeared in the "Sociological Review" for July, by Mr. Alfred E. Zimmern, he changes his opinion, not as to the value of the architecture, but as to its representative nature. Similarly, anyone reading Mr. Zimmern's article without a knowledge of American architecture would not imagine that such a building as the Columbia University Library or New York Custom House could possibly exist. What *milieu* for the encouragement of great architecture is suggested in the following indictment of America's shortcomings? "The human soul can strike no root in the America of to-day. All she asks is a little space and leisure, a little time to think and feel . . . instead of these . . . a universal atmosphere of money-making, the old qualities of the pioneer concentrated and crystallised in the institutions and standards of a business age. In America to-day, not only in the government of the Republic, but in the minds of men, even of young men, business is king. So the poet and artist, poor fools, exchange their few pieces of pure gold and the gratitude of posterity for the brilliant small change of journalism and the applause of an idle crowd. And the moral genius, the teacher, for whom it is a necessity of his nature to translate his ideas into action, becomes tired and despondent and even cynical in the hopeless task of engrafting them on to alien institutions. This is the terrible dilemma of American life to-day, as in all societies where there is a disharmony between the better minds of the people and its organised institutions."

The American "pioneer qualities" have been responsible for the existence of the skyscraper, but not for the fine architecture with which it is often clothed. The only explanation that suggests itself is that the architectural profession in America is one of those unassimilated immigrations from Europe. Its life is exotic, but thoroughly vigorous—more vigorous in many ways than in its native country of France. This is the usual effect of America upon her immigrants; she raises their pitch, she increases their nationalism (or artistic stylism), but they remain separate communities. "The chief thing our people learn in America," said a Balkan friend to Mr. Zimmern, "is Roumanian Nationalism. Up in our mountain villages Roumania is very far from us; here, where all of Roumanian speech are exiles together, it is very near." And thus near to American architects are the true principles of Classical architecture, and thus closely knit and homogeneous is the body of their work; but, unfortunately, it cannot be said to reflect the spirit of the country.

In America, however, there is this fact, that the business men who are the driving force of the land have the good sense to give their architects a free hand when once they have commissioned them: and the result we see in a series of public buildings which have no equal in England.

The Second Volume of the Royal Commission on
Historical Monuments.

THE second volume prepared by the Royal Commission on Historical Monuments (England) was published last week, and relates to the southern part of the county of Buckinghamshire. The reading public, it is presumed, has by this time got over its astonishment at finding a "blue-book" issued in attractive quarto form and interleaved with delightful photographic illustrations of the many familiar and beautiful buildings of the English countryside. The first volume, on the county of Hertfordshire, was a pleasant shock to all our preconceived notions of Government publications, and, indeed, to the architectural world it seemed too good to be true. An English Royal Commission, expressly devised to search out and record our ancient churches, farmhouses, and cottages, and to convey the information thus obtained, with all its careful and curious detail, to the commercial-minded man in the street, was a novelty in very truth. But there was no doubting the words of the reference to the Commissioners as subscribed by his late Majesty King Edward: "Whereas we have deemed it expedient that a Commission should forthwith issue to make an inventory of the Ancient and Historical Monuments and Constructions connected with or illustrative of the contemporary culture, civilisation, and conditions of life of the people of England, excluding Monmouthshire, from the earliest times to the year 1700, and to specify those which seem most worthy of preservation, now know ye, that we, reposing great trust and confidence in your knowledge and ability, have authorised and appointed and do by these presents authorise and appoint you . . . to be our Commissioners for the purposes of the said inquiry." Now, it is one thing to require a complete inventory of every bit of stone, brick, timber, and metal which our forefathers wrought and set up before the close of the seventeenth century and which the ravages of time have permitted to remain, but it is quite another to carry out so stupendous a task. What a story of visitations to wild and unfriendly places, of re-examinations of well-known shrines, of awkward puzzles left by unscrupulous restorers and cunning rebuilders, could be told by the investigators on this heavy task! Yet in the volume now before us they have accredited themselves valiantly. Parishes to the number of 102 have been visited and ransacked and 1,535 buildings and other monuments of a past age have been discovered and described. This is an achievement, but when we look through the book and find more than three hundred pages of detailed description we begin to realise the amount of solid work that has been put into the Report.

It should be a matter of very real satisfaction to the architectural profession that the Commissioners have seen the necessity for a proper technical description of buildings and parts of buildings included, and we have here a monumental work on archæology, written in the main by trained architects. The architect is fitted in many ways for the work that is so often left in the hands of the more or less amateur antiquary, and the Commissioners are to be congratulated upon their selection of an architectural staff of investigators, to whose thoroughness and practical knowledge the Report owes most of its permanent value. The descriptions are methodically arranged; perhaps the "method" is too apparent at times, but that is an official failing which has its good points, and it makes for easy reference. No monument is left undated, in which particular no doubt the powers of the recorders have been severely tried; but the public must be grateful to have the expert opinion definitely set forth.

The most interesting monument in the district of South Buckinghamshire is the Church and College of the Blessed Mary of Eton—to give the school its full title. The buildings, of which a plan is included, are carefully described and dated:

and in addition to the plan there are eight photographs, one of which—the staircase in the north porch of the ante-chapel—is shown with four other views of interesting stairs of the seventeenth century. It must be remembered that the illustrations to this volume—which number over a hundred—represent only a small selection of the photographs taken for the Commission, just as the letterpress is merely a careful *précis* of the full notes and drawings which, we learn, will be stored in the Record Office for reference. Each printed volume of the Commission Reports will therefore bear much the same relation to the manuscript work that the "Index and Summary" bears to the Dictionary of National Biography. It combines the qualities of an exhaustive catalogue of all the antiquities and a concise account of the character of each example, and as such it becomes an invaluable book of reference for the architect's shelves.

After Eton we notice the monastic remains at Burnham Abbey, Notley Abbey, and Great Missenden, Augustinian houses, plans being inserted of the first two. The huge cruciform church at Aylesbury, although greatly restored by Gilbert Scott, is full of interesting details, and other interesting churches include Upton Church, Slough; Fingest, Haddenham, Ickford, Long Crendon, Bierton, and Langley Marish. Upton Church is an interesting and fairly complete structure of the twelfth century, with an original stone vault in the chancel. It contains besides an alabaster image of the Trinity a most curious feature in the shape of a heavily-moulded arch of oak, dating from the thirteenth century, and carved with dog-tooth ornaments.

The fittings of the churches and the various internal details of secular buildings are recorded with skill and knowledge, and a full index has been prepared, which one may see at a glance all the examples of any given architectural feature that occurs in the county. The Commission is preparing and making straight the way of the historian and the architectural student for the future, and we trust the result of its labours will reach no small portion of the British public, who, after all, pay for the publication.

The Regent Street Committee.

WE regard with much satisfaction the appointment of a committee to consider the design which is to be adopted for the rebuilding of Regent Street Quadrant, more particularly because by this means, it is to be hoped, the uncertainty which at present surrounds the problem may be dispelled, and a definite solution arrived at, satisfactory to all parties concerned. At the outset, however, we must express regret that there is no member on the committee who shall put forward the views of the shopkeepers. The Earl of Plymouth is the chairman, with three associates—Sir Henry Tanner, who represents the Office of Works; Mr. John Murray, who will look after the interests of the Commissioners of Woods and Forests; and Professor Reginald Blomfield, who, as a distinguished architect, has been chosen to represent the profession. This committee is excellent so far as it goes, but it is one-sided in its constitution, and the essential problem to solve is two-sided. We have no desire to advocate the case of the shopkeepers against the architects, but it is futile to overlook the fact that 98 per cent. of the shopkeepers signed the petition against Mr. Norman Shaw's design being taken as the model for the entire rebuilding of the Quadrant. Hitherto the question has been approached with a bias towards one side or the other, and the result has been a complete deadlock. To get rid of that there will have to be a give-and-take policy. It is no use for the shopkeepers to keep clamouring for unbroken sheets of plate-glass. We know what that means—total annihilation of all architectural effect, and the shopkeepers must not forget that, though they are in Regent Street for business purposes only, there is a civic duty which

must be recognised—that is to say, the effect of a great street in a capital so sadly lacking in such effects is a factor in the case, and calls for as much recognition as the claims of business. On the other hand, it is no use or the ground landlords to attempt to thrust on the shopkeepers a design which does not meet their needs; in brief, Mr. Norman Shaw's design will have to be substituted by something which more fairly fulfils the business requirements. That the difficulty is not insoluble there is ample evidence to show; as witness, for instance, the design by Messrs. Richardson and Gill which was awarded the first place in the competition which our contemporary, "The Builder," instituted some months ago. One thing is certain, there must be a uniform design for the Quadrant. Regent Street, when Nash finished it, and for many years after, presented a stately, uniform appearance which no other street in London could equal; but the later rebuildings have been allowed to proceed quite independent of the existing scheme and of one another, and as we walk along the thoroughfare to-day we see what a hotch-potch has been produced. The damage already done is irreparable, but there is even time now to save the Quadrant from a similar fate. To this end the Crown authorities stand as a bulwark against the sweeping force of commercialism. They should retain a tight hold of their position, while at the same time being wise enough to go some way towards meeting the shopkeepers' demands. Neither side can have all its own way, so that we hope a spirit of conciliation will prevail. We have every belief that this happy result will be achieved, and that there will thus be an end to a controversy which has already had far too long a life.



Photo: A. J. Loughton.

THE NEW SOUTH TRANSEPT OF SELBY ABBEY.

J. OLDRID SCOTT, F.S.A., F.R.I.B.A., ARCHITECT.

The Problem of St'a. Sophia.

THERE is no doubt whatever about the dangerous condition in which St'a. Sophia is in at the present moment—the great dome is seriously threatened, and unless some active measures are taken without delay an appalling collapse may occur. The difficulty is to get the necessary funds for the undertaking. The Turks are not in a position to furnish them, and the only way of raising the necessary amount would seem to be by an appeal to the Christian world. It need hardly be said that the works of repair necessary to put the fabric in a stable condition will be expensive. The supporting walls of the dome in particular necessitate considerable rebuilding, with all the difficulty which that entails. But in default of this reparation and conservation the dome will assuredly fall in, which would be a catastrophe for East and West alike.

The New Transept of Selby Abbey.

WE illustrate in this issue the new south transept which has been built at Selby Abbey, from designs by Mr. J. Oldrid Scott, F.S.A., F.R.I.B.A. It was consecrated on Thursday last by the Archbishop of York.

The transept takes the place of one which was destroyed by the fall of the central tower in 1690. When the Abbey was reopened two years ago, after the disastrous fire of 1906, a belfry stage was added to the squat, flat tower, thus restoring it to the height of the seventeenth century tower. The rebuilding of the south transept has been made possible by the generosity of Mr. William Liversidge, of Selby, who has given £8,000 for the purpose.

The foundations of the original transept were found in preparing for the present structure. The building was of late Norman date, the same period as the nave and north transept, and had an apsidal chapel in the east wall. The new transept follows this old plan, except that the apsidal chapel has not been rebuilt, though the arch leading into it, of which one jamb remained, has been restored. The opening up a few weeks ago of the arch between the transept and the choir aisle, which had been built up after the fall of the tower, revealed the outer jamb of the arch then destroyed to be in good order and showed the work to be of Decorated date, but later than that of the choir. The style adopted for the new work is of the Decorated period, following rather on the lines of the choir.

The transept is divided into two bays. The principal windows on the side walls are at clerestory level, and are of four lights and richly traceried. The south window is of six lights, and fills practically the whole of the south wall. The entrance to the transept is under this window. The ceiling is groined in oak.

The whole of the interior has been carried out in Tadcaster stone, and the exterior in Huddlestone stone. Externally there are buttresses to the angles on either side of the great south window, finishing above the parapet level in pinnacles with crocketed gablets. The parapet is of pierced tracery work.

The Old G.P.O.

THE merit of the façade of the Old General Post Office, now about to be demolished, has already been discussed in these columns, and a suggestion has been made for the adaptation of the façade to the purposes of a sculpture gallery or museum. Unless someone comes forward, however, with a definite offer to rescue Smirke's fine front the stones will be torn apart for ever. We believe that the London Museum at Kensington Palace has proved an exceedingly popular attraction, and that both the mass of objects shown there and the large number of people who go to see them demand a larger setting in another building. Might not the façade of the old G.P.O. serve again in this way?

THE SUBMERSION OF PHILÆ.

ON the small island of Philæ, in the midst of the Nile, near the second cataract, are to be found several unique examples of late Egyptian architecture, notable as possessing more especially a graceful character which is in striking contrast to the colossal solemnity of Thebes and the supernatural majesty of Abu-Simbel.

The temples belong to the Ptolemaic and Roman periods, the Macedonian rulers having revived Egyptian architecture with no admixture of Greek details, but with great richness in the capitals and applied decoration. The screen wall between the columns was an innovation. Another novelty was the substitution of floral or palm capitals, or quadruple Hathoric masks, for the lotus-bud form. It is noticeable, too, how the shaft was unmarred by the ugly bulbous form (as seen at Thebes), having instead a slight taper, but without entasis.

The island of Philæ was the seat of the worship of Isis, and the temple to this female deity was its most cherished possession. It is necessary now to refer to it in a past sense, for the great scheme of irrigation, with the dam at Assouan, has resulted in the partial submersion of the island; so that it can never again be the Philæ of old. When the irrigation scheme was first put forward in 1893 the head of water contemplated would have entirely covered the buildings for several months in the year, but the protest made against the scheme was so formidable that the engineers were obliged to reduce the height of the dam by 27 ft. For the past ten years, however, the temples have been in an amphibian state, rising, like Aphrodite from the sea, in the summer months—when the climate renders it impracticable for visitors to see them—and becoming

again partially submerged from autumn to spring. Within the next few weeks, with the completion of the dam, the water is to be raised to its fullest height, which means that another 18 ft. will be added. When that happens, and the irrigation scheme is accomplished, it will be possible to judge the ultimate effect on the buildings and their decoration. Judging from a recent report of an Assouan correspondent of the "Times" this effect will be very disastrous.

It should be explained that after the decay of the old religion, when the temples fell into disuse and ruin there was a village colony living on the island, and the accumulated refuse of these dwellers left deposits of salts which, with the advent of the water, have been drawn up by capillary action into the porous sandstone of which the temples are built. With the fall of the water level a crystallisation occurred, and this process having taken place every winter for the past ninety years, the effect is now quite marked. In particular the sculptures have considerably deteriorated, and in certain parts are now almost indistinguishable. In the flooded courts and passages of the temples water-weed have grown luxuriantly, so that, when the level of the reservoir is lowered in April, May, and June, those portions of the temple which have been submerged are seen to be covered with green slime and weeds. The water-vegetation dries into a whitish skin which gradually falls off, and the effect is as if the building had been stuck over with dirty blotting paper. This peels off later in tags and patches, and flutters in the breeze. Some of the surface of the sculptured stone also appears to come off with this plaster of dried weed. At one time the Antiquities Department engaged men to scrape off this plaster with wooden implement



VIEW OF THE OUTER COURT OF THE TEMPLE OF ISIS, PHILÆ, ON THE NILE, SHOWING THE PARTIAL SUBMERSION DUE TO THE ASSOUAN BARRAGE.



GENERAL VIEW OF THE TEMPLE OF ISIS, PHILÆ, PARTLY SUBMERGED.

where it adhered too firmly to be peeled by hand), but the scraping caused so much injury to the sculptured surface that the practice was discontinued.

The fall of many pillars in the great Hall of Columns at Karnak some years ago was due to the effect of salt crystallisation on sandstone. The lower courses and bases of many of the columns had been badly corroded by the action of brackish water for ages, but so long as the accumulation of rubbish and earth inside the building was undisturbed, the columns were held up by it. When the hall was cleared, this support was removed and the fall of one column involved many more. In this case the matter has now been remedied by the construction of concrete bases to replace the crumbled sandstone. When the action of water and salt produces the same effect at Philæ the defective stones can be replaced as required, and the structure will still stand, but at the cost, of course, of all the sculpture and inscriptions that will have vanished with the original stones.

The Assouan correspondent of "The Times" states that on examination in July last it was found that this decay of the stone is present at Philæ and can be detected in the floor blocks and in the bases and lower courses of the columns in the Hypostyle Hall, and in a less degree in the outer and lower-lying portions of the temples. The damage will be duly remedied by the engineers of the Irrigation Service, who, being in charge of the dam, are also in a measure the guardians of Philæ; and the result after some years will be that we shall have an Engineers' not a Ptolemy's Temple.

But when the water is raised to its full height this corrosion will commence in the painted capitals and roof blocks of the famous Hall of Columns. It has been stated that the water will come only up to the vertical flutings below the capitals of the columns, but,

even if this be so, the effect will be the same, for the water will be drawn up into the stone to some distance above the actual surface-level and the peeling of the plaster and paint will follow.

There is yet another danger to be considered. The stone of which the roof is made is of the same porous nature, and in itself is not an ideal material for such a purpose, being too fragile to carry much more than its own weight. If, then, these long blocks, extending from column to column, become saturated with water it appears inevitable that they must break with the additional weight and involve the whole roof. In other parts of the temples, where such a danger has declared itself, steel beams have been placed longitudinally below the stones and afford sufficient support. But in the Hall of Columns the undersides of these roof-blocks are painted and form an essential part of the decoration. The appearance of steel beams supporting these painted stones would therefore be ruinous to the appearance of the roof.

With the still further increase in the height of the water, by the end of the year the destruction of the chief beauties of a temple that has aroused the admiration of generations will have commenced. The buildings may remain indefinitely, but those halls and pylons, which, belted about by graceful trees, stood commanding above the river, will be as the hulk of a derelict ship aground in tide-water.

What a thousand pities that the proposals made for the removal of the temples to another site was never carried out. Their glories would then at least have been preserved partly intact, whereas soon they will be gone for ever. Their removal could have been accomplished with no great difficulty, and, on a neighbouring site, the buildings would have had a suitable setting. But it is too late now to talk of what might have been—the work is done.



PHILÆ BEFORE THE SUBMERSION: WEST COLONNADE OF FORECOURT TO THE TEMPLE OF ISIS.

HERE AND THERE.

WE are accustomed to assume that it was all original work when Early Man sat in the mouth of his cave on the land we now call France and scratched the form of a deer on the bone of some big animal. But it may have been otherwise. He may have copied this primitive form of drawing from what he saw in the cave of another man, friend or foe. And to ask where the latter first learnt the art is merely to bring back the hoary enigma of the hen and the egg. Assuming, however, this cave copying to have been the commencement, the rest becomes intelligible; for the first copyist is like the fortuitous chemical combination which, according to Professor Schäfer, brought Life into being in the dim mists of antiquity. The subsequent development is a regular progression, from the earliest plagiarism on thigh bones to the latest instance on competition strainers. For this appropriation we have had a name, of course, which sheds lustre on the architect rather than impugns his honesty. Tradition, for instance. That covers a multitude of sins, especially if we take refuge in the dictum that it is our privilege to do what others have done before us and to add just that something of our own which will make the whole a tradition for the future. All of which is admirable as a thesis, but we in England of the twentieth century find ourselves without any tradition, and we know very well that it requires no metaphysical analysis to determine when one man plagiarises another. To begin with, the architect who has designed houses on a new estate which have worked out very successfully is likely to undergo the experience of seeing practically the same houses going up on an adjoining estate under the direction of a builder who never fails to keep an eye on the main chance. That is one of the reasons why architects desire so strongly to get a change made in the law affecting the ownership of drawings. After all, the experience and work embodied in, say, a couple of semi-detached houses is not amply paid for by 5 per cent., and it is not fair that the architect should, in law, be unable to retain the tools of his craft, i.e., the drawings by means of which the houses have been erected. It is bad enough when, after the first block has been built, and the building owner, with the roll of drawings under his arm, has bidden the architect good day—it is bad enough then to see whole rows coming into being from the same source, but matters are far worse when the estate agent and the speculating builder come along warily and proceed to copy, without any feelings (and more particularly without any fees) for the architect. You will find practitioners without number ready to commiserate with one another in this matter, and ready also to follow someone else's lead themselves! How often on a drawing-board have I not seen a plan or an elevation out of one of the building papers: put there merely for purposes of admiration. And I recall many instances of executed buildings where entire features have been conveniently assimilated. But here I am treading on dangerous ground, with Libel like a horrid phantom ahead. I will, therefore, make no imputation, but will confine myself to a few propositions. That a delightful doorway to an old Cheshire house should appear in a rejuvenated form on another building by a certain distinguished architect is merely a coincidence. That the joyous little figures which Gabriel Cibber carved over the windows on Wren's south front at Hampton Court Palace should appear *de novo*, though somewhat shrunken, on a London street façade is nothing more than another example of the astonishing way in which two minds can, unconsciously, produce the same result. That a richly carved staircase in a seventeenth-century mansion should find itself transplanted into a modern house designed by another well-known architect is, still,

merely a curious happening. That the Porte St. Denis should reappear in an original design by one of the best-known firms of American architects is a matter not to be considered in any way questionable. In fact, all these instances—and one could keep on multiplying them—simply go to prove what a wonderful thing the human mind is. It was just the same with a garden porch to a Shropshire house by one of our eminent domestic architects. The illustrations—photographs and scale drawings—appeared in a certain publication, a copy of which was desired by a country builder who wanted to put it forward as evidence that the local authority in his district were wrong in declining to pass the design he had submitted. Of course, he had not been copying, and yet the general scheme was the same in both cases, and, curious to note, the scantlings of the corner posts were identical. No doubt with proof positive that such a design was satisfactory, and even allowed in one district, this builder overcame any misgivings his local authority might have had: which shows how useful it is to have distinguished domestic architects handy in case of need.

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The leader on the provincial character of London streets which appeared in this journal last week left me with the gloomy conviction that no improvement will ever be effected until there is established some authority having control over the design of façades. Walking along the Strand it is positively depressing to see the appalling mixture of designs which stand cheek by jowl on either side of the thoroughfare. The old fronts, with the exception of the two eighteenth-century houses opposite the Tivoli—dignified yet, though derelict—are all gone, and we have in their places a conglomeration of brick, stone, and terracotta. But there is, in some degree, an even more deplorable result being achieved in Kingsway, because we all had hopes that in this new thoroughfare at last a commencement would be made towards securing some uniformity of treatment. The Council, in fact, did make a very good start when they held a competition for the island site and its enclosing street frontages, but the competition was dropped like an unclean thing: with the result that, not only is the island site still a wilderness in part, but Kingsway, rapidly becoming an important thoroughfare, is being lined with buildings of heterogeneous design. There is an utter want of cohesion among them, and, with one or two exceptions—one especially—they display nothing better than the styleless character we are accustomed to associate with new civic buildings in the metropolis. One evil only they do not yet display to any extent—the evil of lettering. Here, at least, there is opportunity for immediate action on the part of the controlling authority. It has been said that the merit of the gold letters which bespatter our façades lies in their effective obliteration of the architecture behind. But, for my own part, I think that a very great improvement would be effected if the whole of this lettering were vetoed, and the names of business firms and their specialities kept to fascias and stall boards, with a stipulated maximum depth for letters of all kinds.

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It is a maxim that a man must not be judged by the cut of his clothes, but certainly an architect can well be judged by the design of his chimneys. Almost invariably, where there are good chimneys on a house you may be sure of finding good work within. Chimney stacks offer plenty of scope for effect, and where they must be exposed it is better to do so frankly. Barry's device is a bad precedent, for over the fretted roofs of the Houses of Parliament one often observes the unwonted spectacle of a pinnacle smoking, proclaiming the presence of an iron flue in the midst of its Gothic wrapping.

UBIQUE.

THE WESLEYAN HALL, WESTMINSTER.

THE Wesleyan Methodist Central Hall and Connexional Church Buildings, erected on part of the site of the old Aquarium at Westminster, from designs by Messrs. Lanchester and Rickards, F.F.R.I.B.A., are to be formally opened on October 3rd. A general view of the building was published in our issue for last week, and in the present issue we give a photograph of the dome as the Centre Plate, with photographs and detail drawings of the main staircase on pages 354, 355, 363-366.

Except for the stonework of the upper part of the main (east) façade, and the twin towers which were intended to form imposing features on this front, the work is now practically complete. At an early stage in the erection of the building the towers were found to interfere with the rights of light and air possessed by the Westminster Hospital on the opposite side of Prince's Street, and unfortunately for the time being they have had to be abandoned.

Details of Construction.

The external walls of the building are of unusual strength, being built of bricks in cement and faced with Portland stone, boldly rusticated and moulded, and embellished with some exceptionally fine sculpture and carving, the whole mass being surmounted by a lead-covered dome 90 ft. in diameter. This external dome (which is, on plan, a square with the angles cut off—i.e., an irregular octagon) is a steelwork structure covering another and lesser circular dome of reinforced concrete. The leadwork on the exterior dome is richly moulded and panelled, having at the springing of the four angles some fine large cast-lead trophies. This dome ranks as the third largest in London, being surpassed only by St. Paul's and the dome over the Reading Room of the British Museum. The lantern which crowns the dome is surmounted by a large gilt finial in the form of tongues of fire, symbolising, it has been suggested, the Shekinah of the Old Dispensation and the Pentecost of the New. From the level of the street

pavement to the top of this terminal feature the height is 212 ft. The building stands upon a concrete raft 3 ft. in thickness over the whole site and partly reinforced. It was necessary to excavate the site to a depth of 17 ft. below the pavement level.

Interior Arrangement.

The principal entrance is on the east front facing Prince's Street. In all there are five entrance doors on this side, three leading directly into the vestibule, and the others, on the right and left, to the basement tea room and to the galleries of the large hall. The vestibule, which measures 34 ft. by 20 ft., is lined from floor to ceiling with polished marble of a grey tint, the floor being of the same material, unpolished, and laid to a geometrical pattern. From the vestibule a flight of marble steps ascends to the large entrance hall, 65 ft. by 40 ft. and 26 ft. in height, the walls of this hall being also lined with marble to a height of 8 ft. 6 in. Six solid marble doorways lead from the entrance hall, which has four circular pedestals projecting from the walls, carrying electric lamp standards. The walls above the dado are finished in Keene's cement, painted a cream tint, the ceilings and arches being panelled and enriched.

A doorway on the right of the entrance hall leads to the Conference Hall, an apartment 55 ft. by 49 ft., providing accommodation for more than 100 persons. There is also on this floor a Small Hall, 77 ft. by 59 ft. with a height of 26 ft., providing seating accommodation for about 600. Columns and pilasters carry the deeply-coffered ceiling and reinforced concrete beams which, in turn, support the Large Hall above. A feature of this Small Hall is a dado of oak, panelled and moulded to a height of 8 ft. 6 in. On the left and south side of the building are the premises of the London City and Midland Bank and the Library, the latter being a counterpart of the Small Hall.

From the swing doors immediately to the rear of the entrance hall a corridor, 61 ft. long by 14 ft. wide and

*Photo: L. V. Cashmore.*

THE WESLEYAN HALL, WESTMINSTER: VIEW OF LANDING AT TOP OF PRINCIPAL STAIRCASE.

LANCHESTER AND RICKARDS, F.F.R.I.B.A., ARCHITECTS.



Photo: L. V. Cashmore.

THE WESLEYAN HALL, WESTMINSTER: GENERAL VIEW OF GRAND STAIRCASE FROM BELOW.

LANCHESTER AND RICKARDS, F.F.R.I.B.A., ARCHITECTS.

Note.—The electric-light standards on the pedestals were not fixed in position at the time this photograph was taken; the lights shown being of course merely temporary.

21 ft. high, runs from east to west, dividing the Small Hall and the Library by rolling shutters on either side. By this arrangement the Small Hall, the Library, and the corridor can be thrown into one immense hall when needed. The organ formerly used in the Westminster Aquarium is to be converted and adapted to the requirements of the Small Hall, in which it will be re-erected. The western portion of the building contains committee rooms and offices, with entrances on the centre of the west front and at the south-west corner from Tothill Street.

The Grand Staircase.

The grand staircase, built of grey Roman marble, is a remarkably fine feature of the interior. It is partly contained in the semi-circular projection in the middle of the east front. On either side of the entrance hall two splendid flights of steps rise in graceful curves to a broad landing, beyond which the ascent is continued by one great central flight to a level immediately beneath the big main window. Here the staircase divides again, turning and rising in symmetrical curves to the level of the ante-hall, from which access is gained to the Concert Hall beyond. The construction of this fine staircase may be studied from the original working drawings which, by courtesy of the architects, we are able to reproduce. There is no reinforced con-

crete in this staircase. The great arch which spans it on the ground-floor level is a very solid piece of construction, comprising no fewer than seventeen courses of brickwork, which give a total depth of 5 ft. 9 in. There is a similar arch on the opposite side of the entrance hall. The balustrade and handrails to the staircase are executed in solid bronze and black iron. The design is distinctly original, the repeated circular motif harmonising perfectly with the curvature and upward ascent of the staircase.

Foyers are provided on either end of the ante-hall, together with ladies' and gentlemen's cloakrooms. Wide corridors run from these foyers, and ample exits are provided direct to Tothill Street and Parker Street, thoroughfares on the southern and northern sides respectively. The ante-hall and the foyers contain a series of thirty monolithic columns and pilasters of "Arni Fantastique" marble, the capitals and bases being of Roman marble, of which, also, the two entrance doorways to the Large Hall are formed.

The Large Hall.

The Large Hall, which provides seating accommodation for 2,500 people, measures 112 ft. by 80 ft. by 70 ft. in height from the floor to the centre of the domical ceiling. This latter is constructed of reinforced concrete, and is finely coffered and enriched with much

decorative plasterwork. Diagonally from pendentive to pendentive the width is 109 ft. A large organ, built by Messrs. William Hill and Son, occupies the west transept at the back of the choir gallery and platform. The galleries on the east, north, and south sides are constructed of reinforced concrete, as also are the transepts. Heating is by the plenum system, the warm air being brought in through the perforated ornaments in the centre of the ceiling. A platform assembly room and two vestries for the use of speakers and ministers are situated at the rear of the orchestra, and a large ante-hall and foyers are provided on the gallery level, with adequate cloakroom accommodation.

The basement, which is to be utilised as a tea-room, is 172 ft. long by 64 ft. wide, and is estimated to seat about 1,000 persons.

Materials Used.

Some idea of the great size of the building may be gained by a statement of the quantities of a few of the materials used in its construction. Of concrete, 9,717 cubic yards have been used, weighing 15,240 tons. There are also 150,000 cubic feet of Portland stone, weighing 10,063 tons; 6,000,000 Fletton bricks; 300,000 white and salt-glazed bricks; and 300,000 Staffordshire blue bricks, making a total of more than six and a half millions of bricks. The Kahn bars (supplied by the Trussed Concrete Steel Company) used for the reinforcement of the concrete weigh 422½ tons. It may be here noted that the Kahn system has proved itself thoroughly satisfactory, after very severe tests. Messrs. Dawnay and Sons supplied 630 tons of steel guides, stanchions, and trusses for the construction of the outer dome; 5,000 tons of Portland cement have been used in concrete and brickwork; and there are 209 tons of lead in and on the building.

The general contractors were Messrs. Dove Bros., Limited, of Islington. The electric lighting and power installations have been carried out by Messrs. Strode and Co., and the electric fittings (of real bronze, to the designs of the architects) have been supplied by Messrs. J. W. Singer and Sons and Messrs. Strode and Co. The external modelling and sculpture in stonework, together with the trophies at the angles of the dome, have been executed by Mr. Henry Poole, of Chelsea, some part of the stonework being the work of Mr. Fagan. The lead trophies were executed in cast lead from Mr. Poole's models, all the other ornaments in lead having been carried out by Messrs. J. W. Singer and Sons, who were responsible also for the balustrading to the grand staircase. Messrs. H. H. Martyn and Co. executed the modelled plaster work in the entrance hall and in the dome and arches of the Large Hall; also the wood-carving to the four doorways in the galleries of the Large Hall. Messrs. Whitehead and Sons were responsible for all the marble work, which was prepared at their works at Kennington Oval. For the bulk of the foregoing information we are indebted to Mr. E. C. Howell, the clerk of the works, who, it is interesting to note, was engaged in a similar capacity at the new City Hall and Law Courts at Cardiff.

TWO PIONEERS IN TOWN PLANNING.

JOHN GWYNN outlined, in his "London and Westminster Improved," which was published in 1766, a very passable scheme of town-planning, and is therefore to be considered as a pioneer in this movement. A description of his work was published in the "Morning Post" some short time ago by Mr. E. Beresford Chancellor, who in the same paper has now given an account of Sydney Smirke's thin volume of "Suggestions for the Architectural Improvement of the Western Part of London," issued in 1834.

Sydney Smirke was the brother of the better-known Robert, and succeeded him as architect to the British Museum.

His book comprises 117 pages of letterpress, and illustrated with a plan and two engravings. Smirke showed a group of Parliamentary buildings, which he proposed for erection in the middle of the Green Park, and this scheme was to include "a national edifice to receive the monuments of illustrious men."

Smirke's essay in town-planning aimed at the extension of Piccadilly and Coventry Street towards the east. "The two sides of Sydney's Alley should be pulled down, the houses on the left rebuilt on a large scale, and their fronts brought forward in a line with the north side of Coventry Street; the houses on the right-hand side would of course be wholly removed. The proposal with respect to the line eastward of Leicester Square was to alter the north side of Beaumont Street, and demolish the houses on the north side of the narrow court which led into St. Martin's Lane, so as to form a straight road from Piccadilly to Coventry Garden Market and Drury Lane and Coventry Theatre, where there was to be a piazza "somewhat in the shape of a quadrant."

The publication of Smirke's ideas may have been affected, by the process of permeation, if not by direct adoption, the improvements that were carried to effect in this district ten years after the appearance of Smirke's book, for in 1843 Cranbourn Street was enlarged by the demolition of its south side, and Coventry Street was widened and continued through Sydney Alley and Cranbourn Alley to Long Acre; but the piazza suggested by Smirke was not formed. The slums in the Clare Market region, of which he desired to get rid, were not swept away until clearance had to be made for the new Law Courts. He also followed Gwynn more or less closely in a scheme for extending the Haymarket northward to Oxford Street at the point where Smirke had rebuilt the Pantheon at a cost of some £30,000.

The continuation of the Mall to Charing Cross was also suggested by Smirke after Gwynn, and on the whole he seems to have been a very respectable town-planner, born out of due season. If his schemes had been realised in his day instead of in ours, they might not have been carried out quite so lavishly as he could have wished, because his feeling for breadth and spaciousness was not typical of his times; but, on the other hand, the town-planning movement would have got a good start some half-century or more earlier than the small beginnings we have as yet made.

A HOLIDAY COMPETITION.

THE holiday competition which we instituted at the beginning of August, and which has been followed by readers of this journal with so much interest, came to a close on Monday—the last day for receiving prints. In the present issue we give four further photographs from those submitted, and in the next issue we shall publish the remainder of those which we have selected for reproduction.

The following notes relate to the accompanying illustrations:—

South Wingfield Manor House, Derbyshire.

From the ruins at South Wingfield we gain a good idea of a large defensive domestic establishment of the Middle Ages, the manor house having been built by Ralph Cromwell, treasurer to Henry VI., 1435-40. The buildings comprise an outer and an inner courtyard, the servants' buildings, stables, and guardroom being grouped round the former and the State apartment and great hall being placed in the inner court. The whole is Perpendicular in style, and some of the best features are in a good state of preservation. The bay window of the hall is a particularly striking example. South Wingfield Manor House was one of the places



Photo : F. H. Leatherdale.

OLD WELL AT SADDLESCOMBE, SUSSEX.



Photo : B. C. Westwick.

WINGFIELD MANOR, DERBYSHIRE: RUINS OF THE HALL.



Photo : E. J. May, F.R.I.B.A.

CHURCH OF ST. MARY, CAPEL-LE-FERNE,
NEAR FOLKESTONE.



Photo : A. Thorpe.

WROUGHT-IRON GATE IN A PRIVATE GARDEN AT
WINCHELSEA.

PHOTOGRAPHS SUBMITTED IN THE HOLIDAY COMPETITION.

of confinement of Mary, Queen of Scots (1569), and was besieged, wrecked, and captured by the Parliamentarians during the Civil Wars.

Old Well at Saddlescombe.

The village of Saddlescombe is near Poynings, Sussex. The well dates approximately from 1800. It is an admirable example of structural design, and although made so many years ago is still intact. Attached by means of a chain are two wooden buckets working by the projecting spindle of the wheel. Originally the buckets were brought to the surface by a horse heading the wheel from the inside, but later the horse was dispensed with and the well worked by two men. Mr. Leatherdale says that by experimental mathematics he has calculated the well to be approximately 250 ft. deep. A main is now being laid on to the village, and so the well will soon be obsolete.

Church of St. Mary, Capel-le-Ferne.

The view of the east end of this little church shows the most unusual arrangement of three chancel arches. The lower parts of the walls are Norman; at a later date they were raised, and large perpendicular windows were inserted. The detail of the chancel arches is Early Decorated, the columns being octagonal. Can the semi-circular arch over the latter be the old chancel arch raised? The width of the nave is 17 ft. 4 in., and the height of the centre arch seen in the photograph 8 ft. 5 in.

Ironwork at Winchelsea.

Mr. A. Thorpe, who sends this photograph, has not been able to trace the history of the ironwork, but says that it is exquisitely wrought. It certainly is not of the usual English type; on the contrary, it looks like German work.

THE R.I.B.A. PROBLEMS IN DESIGN.

THE bi-monthly problems in design set by the Institute as testimonies of study for the Final Examination are causing a great deal of interest and enthusiasm among keen students. We therefore propose to publish at regular intervals a selection of designs which have been submitted and have received the approval of the Institute. These will be valuable to students in preparing their drawings, as showing the standard of design and draughtsmanship expected. It will be remembered that after the end of next year it will be necessary for every student to have obtained the approval of the Institute for four of these designs before he can sit for his examination, and consequently before he can become a member of the R.I.B.A. Up to the end of 1913 these designs are an alternative to the old schemes of testimonies, but as they provide a more interesting field of study than drawings made from plates and other such sources, students are beginning to submit them in large numbers.

We start our series by a selection of approved designs sent in by students of the School of Architecture of Liverpool University. In future numbers we shall publish designs submitted by members of other schools and by individuals working privately. Our aim will be to help the student by showing the best submitted, and to stimulate interest in these competitions, the founding of which we consider to be the best educational step the Institute has taken.

The designs shown on the following pages are of Subject I., comprising:—

(a) A large monument, to commemorate King Alfred's refounding of London 1,000 years ago, for a public place in the City, not to cover more than 500 ft. super. (Drawings to $\frac{1}{2}$ in. scale, and shaded.)

(b) A terrace of five houses—20 ft. frontage, each six stories high, including basement—facing the parade of a small watering-place. Detailed construction of one house to be given, and a design for the complete terrace. (Drawings to $\frac{1}{8}$ in. and $\frac{1}{2}$ in. scale.)

BEAUTY IN ENGINEERING.

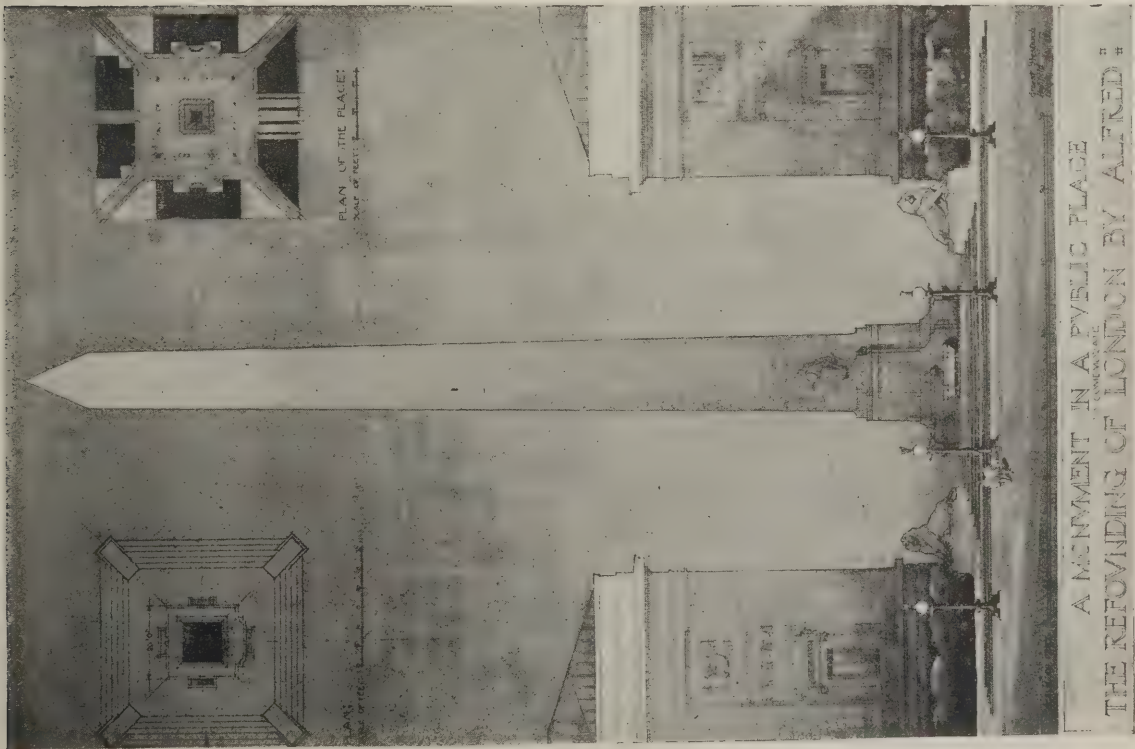
PROFESSOR BERESFORD PITE'S VIEWS.

THE subject of engineering æsthetics, often dealt with in the past, has been brought to the forefront once again by the address which Professor Beresford Pite delivered recently before the Engineering Section of the British Association, an address which has already been reported and criticised in these columns. To the discussion must now be added Professor Beresford Pite's views, as expressed in a letter to "The Times." In his British Association address Professor Beresford Pite emphasised the responsibility of engineers for unnecessary offensiveness in their structures, in which connection Professor Beresford Pite advises engineers first and always to mind their own business, which is definitely in its object, rather than trouble about that very indefinite thing called taste. "If the interest and beauty of a Gothic cathedral have grown out of progressive success in achieving structural purpose, and 'ornamental engineering' is a true definition of the acme of the process, simple undeflected concentration on the interests of the problem in hand and their consistent and workmanlike expression must earn the recognition of beauty for all honest modern structure in metal, as they have of mediæval building in stone. We are perhaps prepared to admit this in a suspension bridge or an unadorned viaduct, but the principle is operative equally in a locomotive, Dreadnought, or pipeline structure. The interest is that of the purpose to be achieved, the satisfactoriness with which that purpose is scientifically carried out by means justly proportioned to the end."

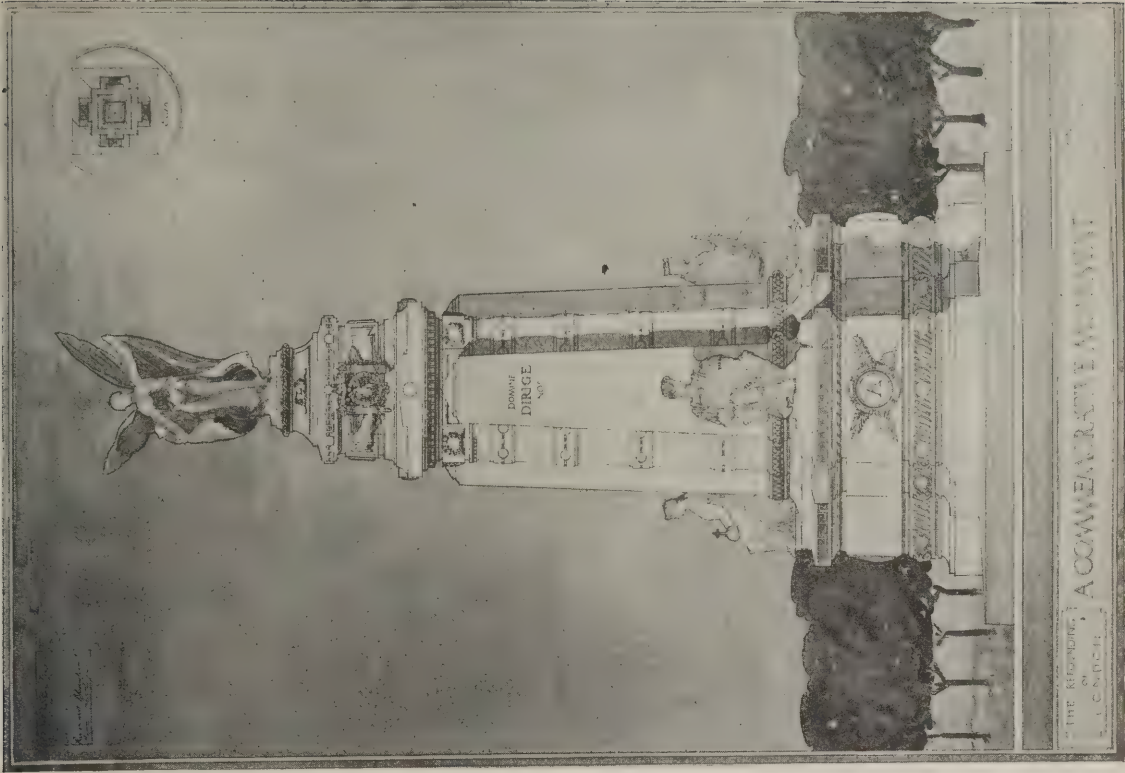
As a side issue to the discussion Mr. Carøe has stigmatised the colours used by engineers—the red oxide preservative paint, which is usually specified as a technical requisite, and the stock colours employed by railway companies. Professor Pite, however, dissents from this disapproval, and would beg engineers consistently to beware either of an æsthetic use of paint or of an attempt to render their works inconspicuous by selecting bronze greens to harmonise with landscapes, or cerulean blues when exhibited on the sky-line. "The advice of William Morris was once sought when Battersea Bridge had to be repainted, and he, I imagine somewhat scornfully, suggested that black was the only paint possible for such a work of engineering, but whether black or white, green or blue, æsthetic considerations of harmony and tint are out of place on entirely practical structures. Personal taste from some quarter or another is certain to be offended, and as artistic canons for the salvation of the obliging engineer do not exist such uncomfortable adjectives as 'hideous' and 'garish' may be earned with the best intention. Colour salvation will only be found in some convention either of red oxide or by use of direct contrasts as black and white, using one for the tension and the other for the compression members of a compound structure."

"I hope that the day may soon come when the inartistic prejudice against the pleasant silvery green of galvanised ironwork will pass and its power of combining neutrally with either the colour of nature or the grime of towns be admitted. It certainly has as much theoretically in its favour as the tar of farm building and the whitewash of cottages, which find such favour with the pseudo-artist."

"In conclusion, may I suggest that Mr. Carøe's dictum that the sheds, footbridges, and platform cover of a railway station 'are at best never engaging objects to look upon' is entirely subject to the point of view of the spectator? To one in sympathy with their purpose and enjoying their usefulness, when devoid of architectural superstition, natural in their expression clothed in their uniform of distinctive paint, they are as 'beautiful engineering' as a group of honest farm buildings or a really mediæval castle."

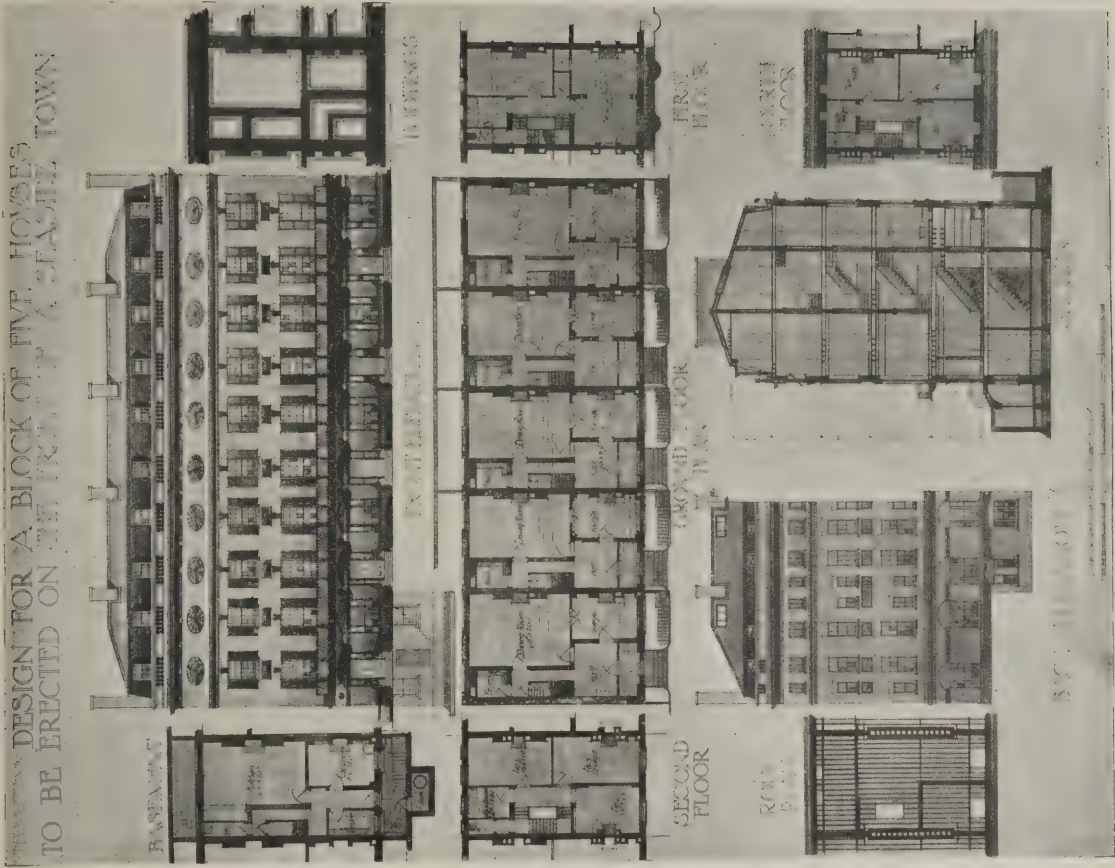
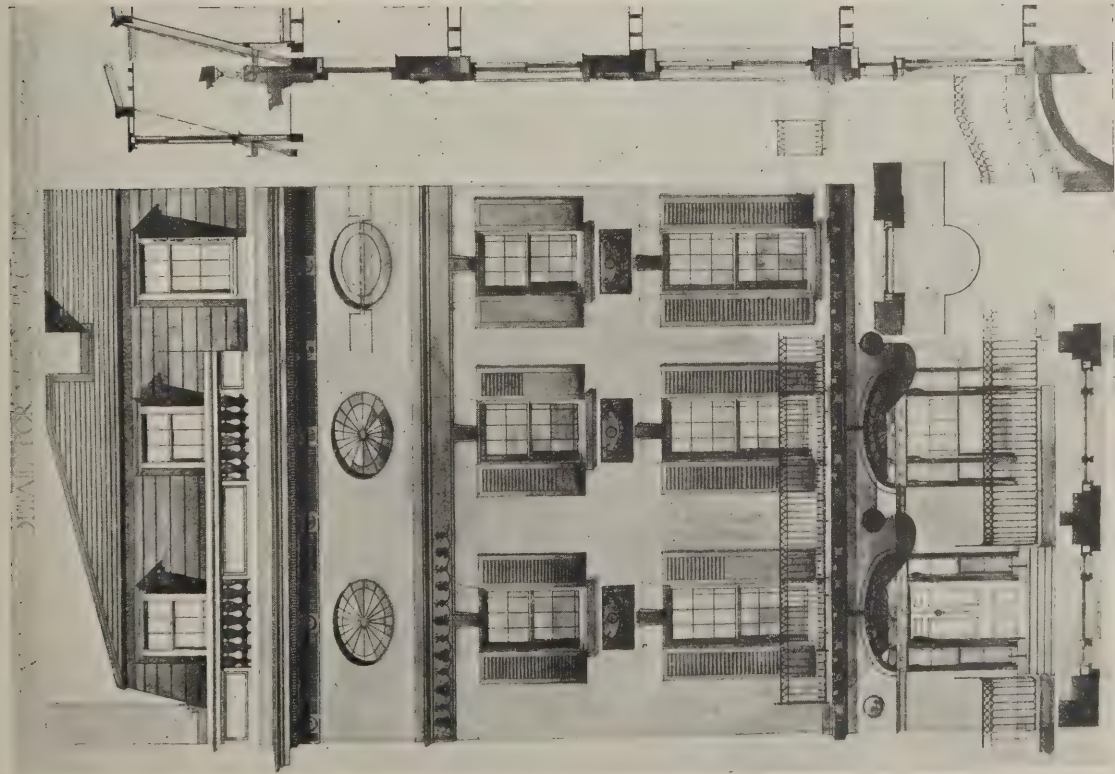


By E. C. Prestwich (Liverpool School of Architecture).



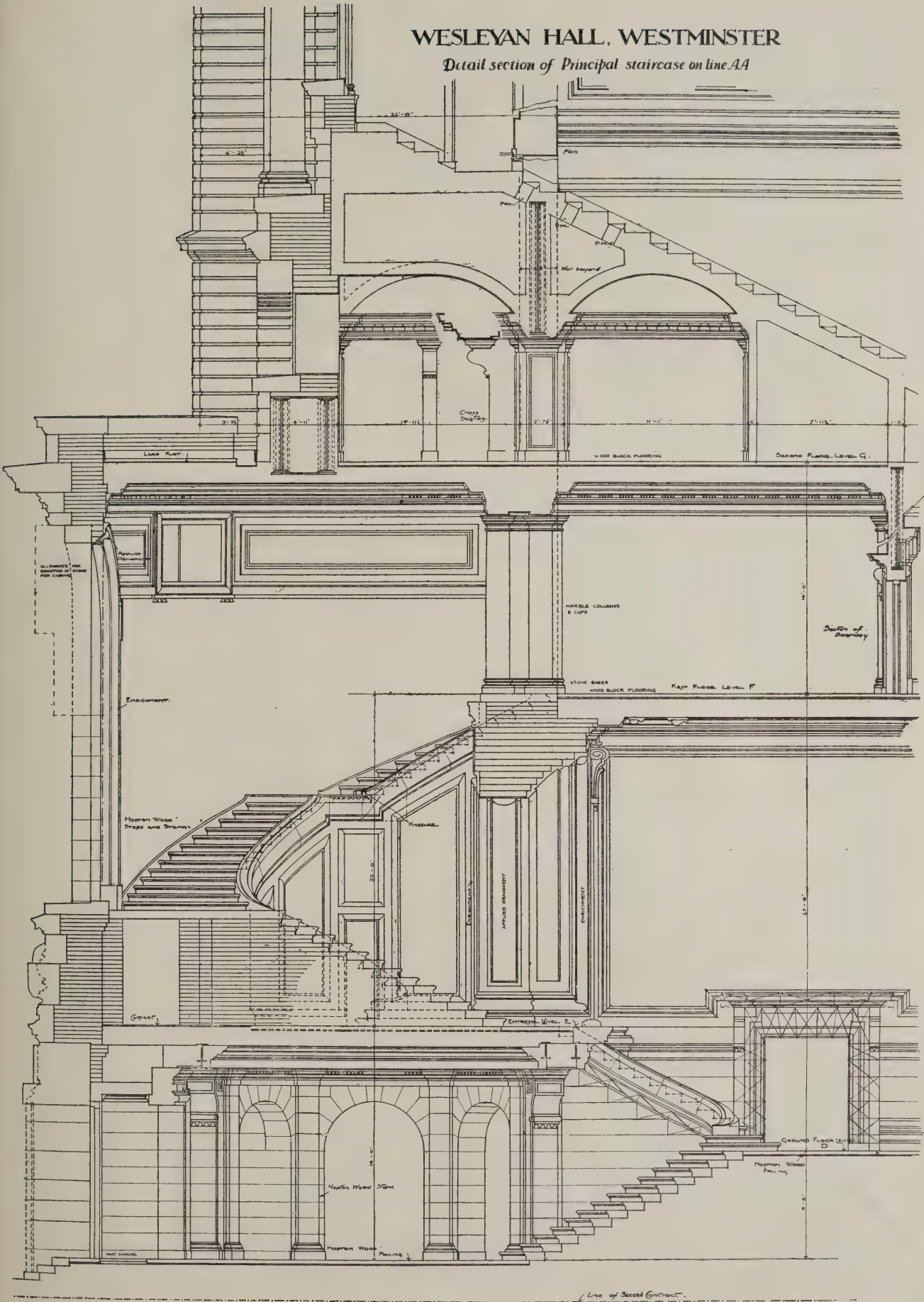
By H. A. Dod (Liverpool School of Architecture).

TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION: APPROVED DESIGNS, SUBJECT I (a).



By Stevenson Jones (Liverpool School of Architecture).

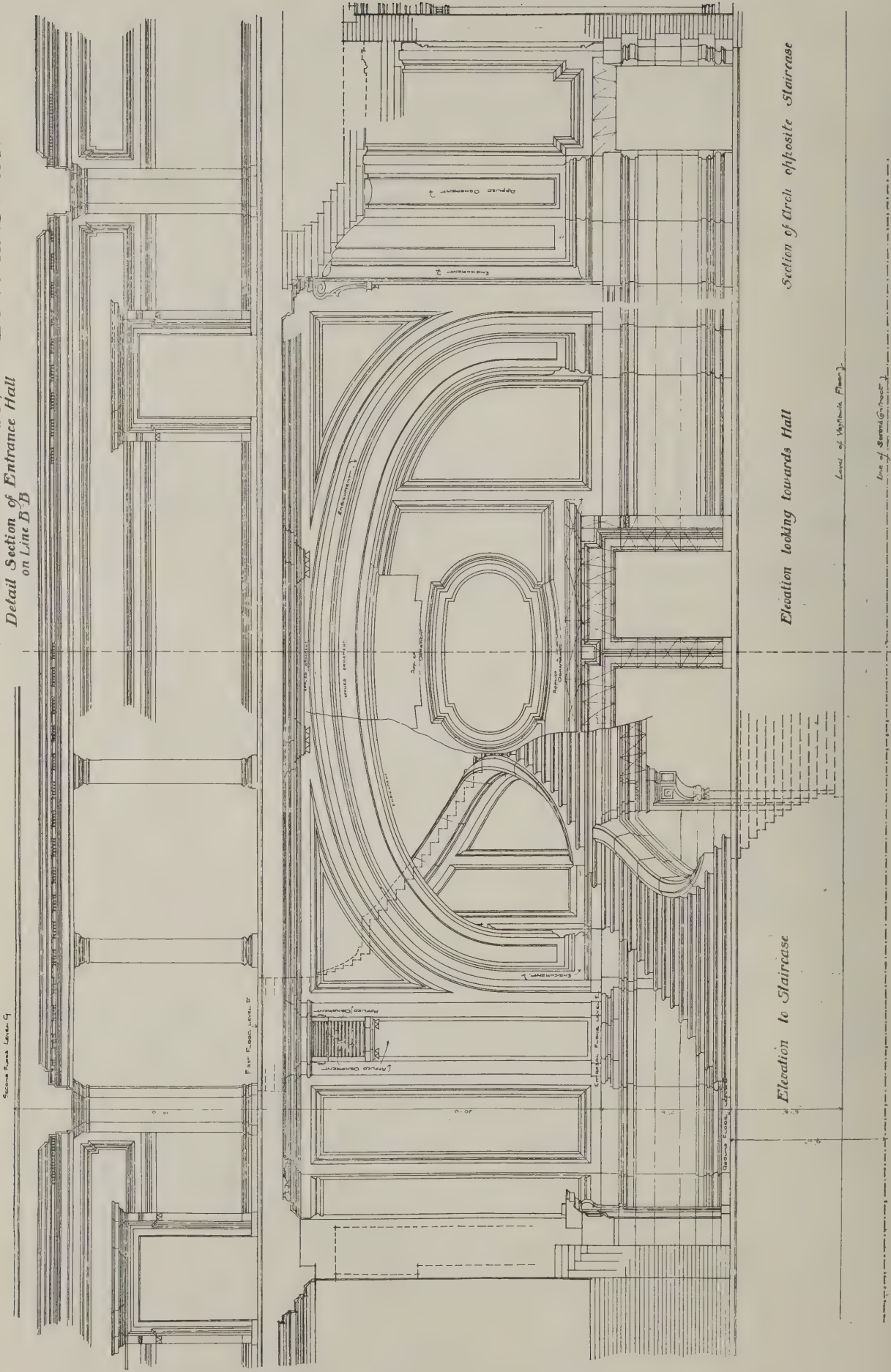
TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION: APPROVED DESIGNS, SUBJECT I (b).



1/8th scale as reprod ced.

LANCHESTER AND RICKARDS, FF.R.I.B.A., ARCHITECTS.

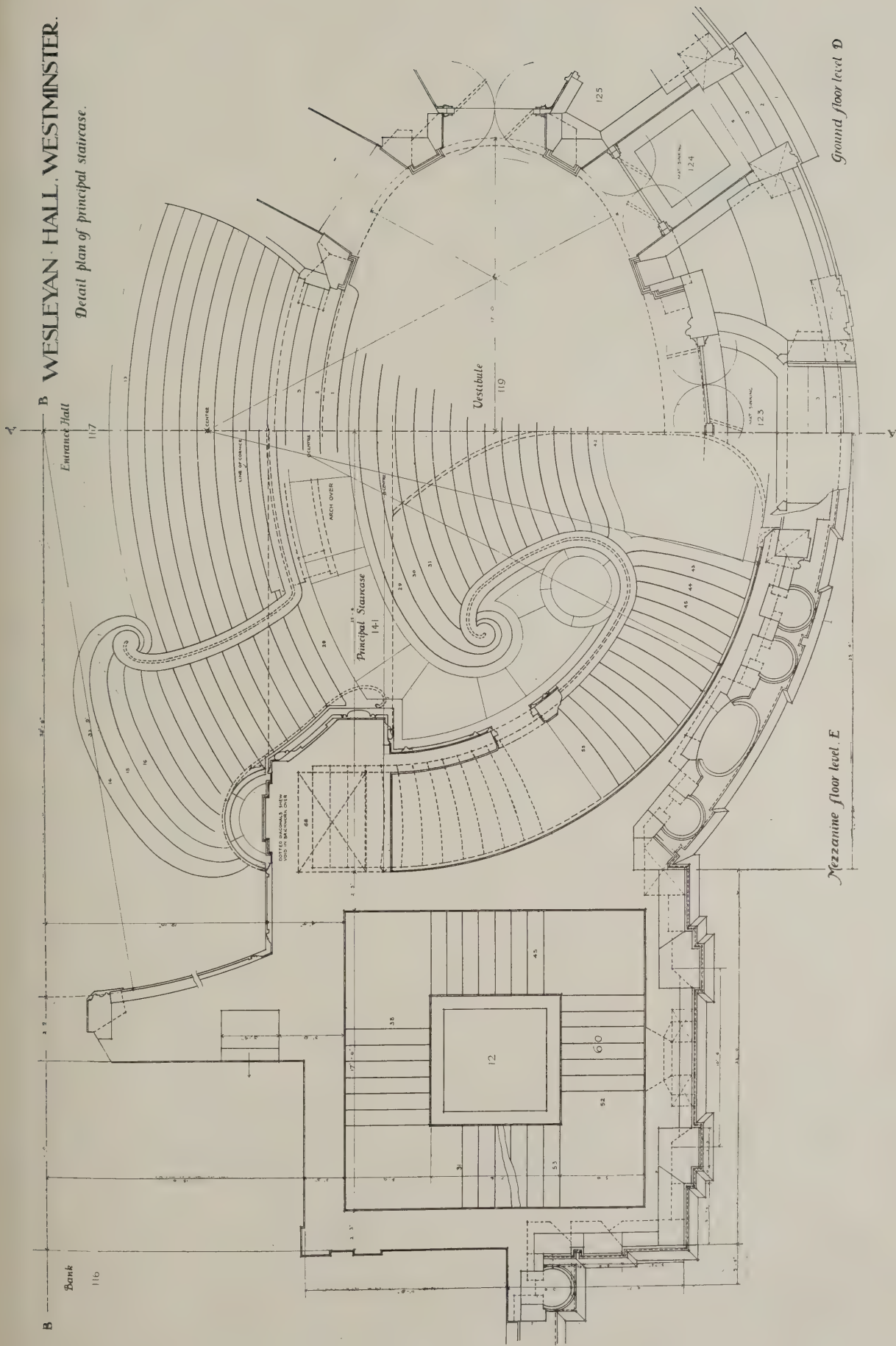
WESLEYAN HALL, WESTMINSTER.
Detail Section of Entrance Hall
on Line D-D



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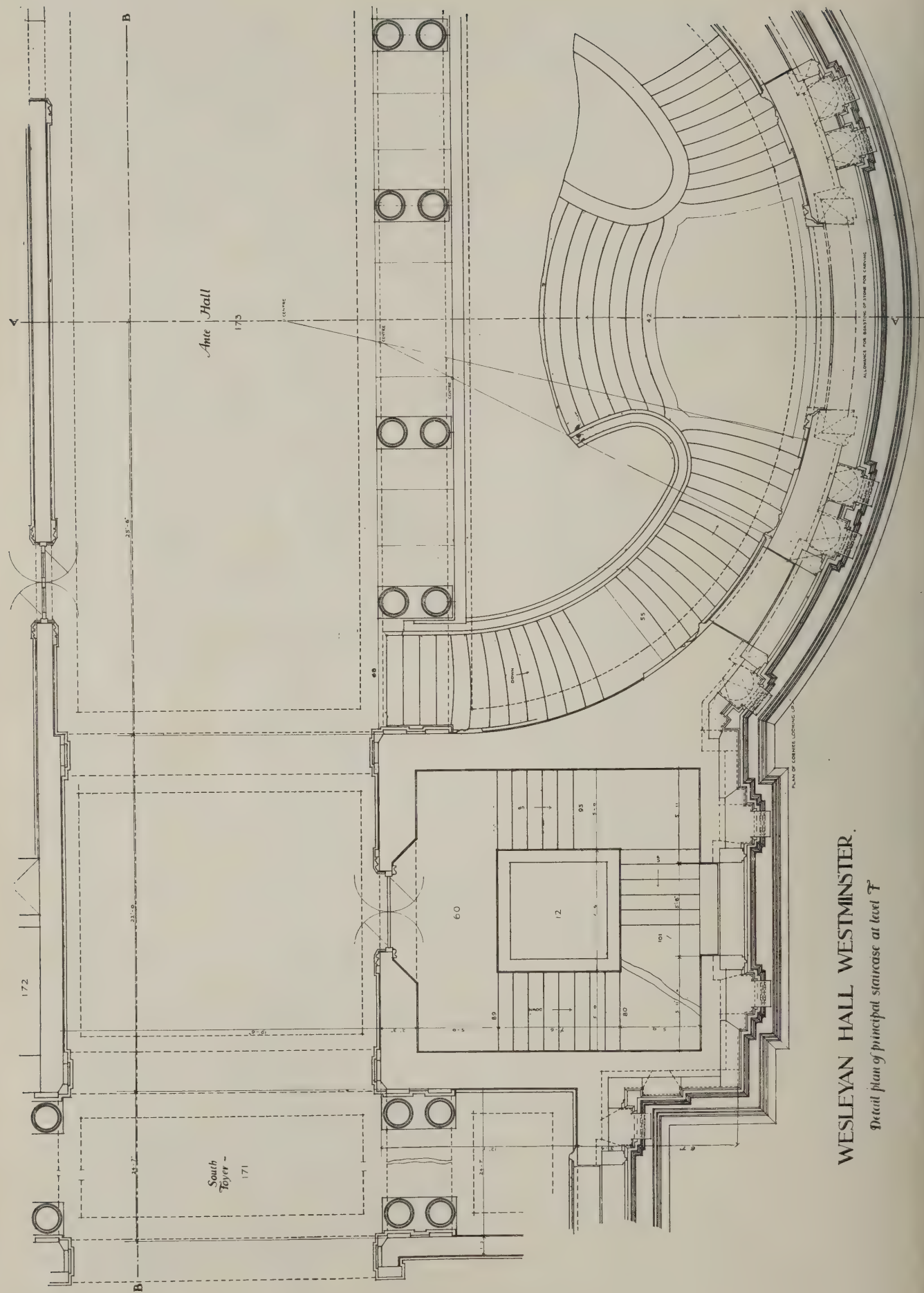
LANCHESTER AND RICKARDS, FF.R.I.B.A., ARCHITECTS.

B WESLEVAN HALL, WESTMINSTER.
Detail plan of principal staircase.



1/4th scale as reproduced.

LANCHESTER AND RICKARDS, FF.R.I.B.A., ARCHITECTS.



WESLEYAN HALL WESTMINSTER.
Detail plan of pinwheel staircase at level T

1/8th scale as reproduced.

BUILDING BY-LAWS AND HOW
TO EVADE THEM.

BY A LAYMAN.

The following clever and amusing use of sarcasm seems to have been introduced with the threefold object of exposing (1) the ineptitude of certain local laws; (2) the ease with which they may be evaded by the unscrupulous; and (3) the injustice of assuming that a mere layman is incompetent to deal with such a highly technical subject as the interpretation of building by-laws; for the author confesses that he is not a builder. Nevertheless, he puts his imaginary case with considerable technical skill; and it is very doubtful whether, by virtue of this gift of imagination in his very comprehensive supposititious case, he is not really holding a lamp to the feet of the law, by pointing out to them a few methods of evasion which with their own aided powers they had been hitherto incapable of conceiving. His satirical play in subterfuge, however, serves an excellent purpose in emphasising the need for only for extreme care in drafting by-laws, but for greater wisdom—and perhaps for greater discretionary powers—as their administration.

I shall try to imagine myself as an unscrupulous jerry-builder anxious to sail near the wind as is safe, and not too much troubled about matters of public health. I shall suppose I have acquired a tract of land, formerly the site of a quarry, but the said quarry having lately been filled in with ashes, salmon tins, and refuse of all kinds, is now at a fairly level tract. I examine carefully the regulations, and find there is nothing to hinder beginning my row of workmen's stages the minute the last load of barrel hoops, sardine and lobster tins, and dust from the pneumatic cleaners, has been used the land to present a level if somewhat elastic surface.

At the moment of purchasing my foundation stones from a local quarry, I look at the regulations again. To my joy I dispense with foundations. Nowhere in the bulky sixty-six page pamphlet are they insisted upon. The salmon tins and engine ashes will do to rest my walls and I begin to build.

On one side of my "land" I shall suppose to be in existence a colony of stables, a series, and a reeking manure-pit. The fact of their being already there solves a difficulty of mine. Though I cannot build a stable or fix a manure-pit less than five feet from my houses, I am quite free to build my houses bang up to existing stables and manure-pits. This provision enables me to economise space.

The power to make money in building is largely dependent on the speed with which you can run them up. I am ready for my floors, and have to think about joists and floor-boards. The regulations are framed for my encouragement. There are none! I have a free and unfettered choice for the flooring material between planks and cardboard, such other material as may suit my fancy. It can be any thickness I like. The same happy care applies to the joists or joists whereby my floors are to be supported. They can be of any length or weakness, and any distance apart. If I decide on wood it may be of any condition or quality. I am not now liberty, as I was two years ago, to lay

my joists on the salmon tins, but I am free to exercise my own judgment as to what I may regard as the minimum of safety, and in my case this, of course, is regulated mostly by cost.

In about seven days from the start of operations I am ready, of course, to consider my windows. I find the regulations prescribe that every habitable room shall have at least one window, but no stipulation is made as to its size. Builders tell me that walls are as cheap as windows, and may even be cheaper if you are lucky in your stone and brick contracts, so I don't waste much time in planning anything beyond plain peep-holes.

For the sake of economy I want my row of houses to be three hundred yards long without a break. I look up my regulations, and I find to my dismay I am limited to a total length of two hundred yards, and have then to provide an intersecting street. This means the loss of some houses. The fact causes me to examine my regulations more closely, and I discover cause for hope. The words which fill me with hope run: "In any case where this regulation cannot be enforced without considerable sacrifice of property the Council shall be at liberty to waive or modify the above requirement as they may deem proper."

Surely a committee of experts will appreciate my case. They will know by practical experience that a sacrifice of my property is certainly involved. If there were no experts on the committee my case would, of course, be desperate. Moreover, the fiction that the Council shall decide deceives nobody. Have I not frequently been told that the Buildings Committee has statutory powers in regard to plans, and that, once passed, the Council cannot vary them if the committee cares to say so?

I shall next be considering my internal fittings. I find that if I make my rooms less than 10 ft. square, I am called on to provide ventilation, either by fireplace, or some other means. This obligation, however, I escape if I exceed that size, so I make them 10 ft. 1 in. square, and I save the cost of any ventilating arrangements of any kind. My prospective tenant must provide a gas stove to warm himself, and, if he likes, also to suffocate himself.

By this time I am considering my roofs. I am running short of money, and my mortgages are demanding economy. I turn to my regulations again with fear and trembling as to the costs to which I may have to subject myself in the matter of slates, tiles, and other roofing materials. The committee of experts again comes to my rescue. All the stipulations in regard to roofs are benevolently suppressed. My course is made clear. I am free to employ sacking, or brown paper or celluloid. I have no irritating restrictions to observe as to stability of beams, or the weather-resisting properties of my covering. So I finish off my houses with a light heart.

As a layman new to the building trade, I have, of course, been keen on observing strictly all the regulations laid down by the experts. My purchasers or tenants have no cause for complaint, and so my conscience is clear. If the dwelling is not weather-proof, if it begins to sink into the earth, if the floors give way, or a storm wreaks damage on the structure, it is what the people are used to. I am in no sense responsible. I possess the Corporation's certificate of fitness for habitation, and can go my way in peace.

ENQUIRIES ANSWERED.

Books on Dome Design.

REX (Scotland) writes: "Please recommend books dealing with the design of domes artistically and constructionally; also book on graphic statics which treats of problems of the stresses in dome, arch, and bridge in reinforced concrete, etc."

—No book, so far as we are aware, has been published dealing with the design, etc., of the dome. Charnock's "Graphic Statics," part 3, section 2 (12s. 6d. net, postage 4d.) is the best book we can recommend; this deals with arches, domes, etc. There is no book especially for reinforced concrete work in domes, although there is a little information on the subject in the works by Buel and Hill ("Reinforced Concrete," 21s. net) and Marsh and Dunn ("Reinforced Concrete," 31s. 6d. net; "Concise Treatise," 7s. 6d. net; "Manual," 7s. 6d. net).

Sound Prevention with 9-in. Party Wall.

H. M. and S. (Manchester) write: "Is there any effective method of preventing sound travelling through the party wall of a pair of semi-detached houses? Would an ordinary 9-in. wall do, if oversailing courses were built to support the joist, and thereby prevent contact of the joists?"

—The proposal to corbel out wall plates may slightly help in the reduction of transmitted sound, and a strip of felt laid on the plates before bedding joists would be a further improvement; but the prevention of piano sounds penetrating is a very difficult problem. Independent walls untied by any metal or other bonders would be about the only way likely to meet with complete success, but an untied hollow wall pugged with silicate cotton or slag wool would help. The use of ordinary lime plaster in preference to any of the modern hard-setting plasters is advisable, as these hard surfaces transmit sound like a drum. G.

Sand-Lime Bricks.

G. T. S. writes: "Are there in this country any manufacturers of bricks made of sand and lime, as made and used extensively on the Continent?"

—White lime-sand bricks are made by the Godstone Brick and Tile Co., of Oxted Road, Godstone, Surrey, who supply at 26s. per thousand within a ten mile radius of their works. A sample and price will be sent by the company on receipt of a postcard.

Wall to Support Motor.

INQUIRER (Lincs.) writes: "It is proposed to fix an electric motor weighing half a ton by bolting it to a 14-in. wall in the first floor of a warehouse. Please say whether in your opinion a well-built 14-in. wall is strong enough to carry the extra weight of the motor, or what formula should be used to find the strength of wall required to carry it?"

—Whether a 14-in. wall is capable of supporting a motor in the manner proposed depends upon other factors than mere thickness. The formula for cantilever loading may be used; $z \times y = w \times l$, where z equals weight of superstructure bearing on point of attachment, y equals thickness of wall, w equals weight of motor, and l equals distance from face of wall to centre of gravity of motor. The wall presumably supports an upper floor or roof—if it does not, calculations for overturning forces due to eccentric loading must also be made. The probability is that the fixing will be perfectly stable.

THE COST AND CONSTRUCTION
OF ISOLATION HOSPITALS.

Reference was made recently, in an editorial note, to the report by Dr. H. Franklin Parsons to the Local Government Board on his inquiry, made at their request, into the cost of construction of isolation hospitals, and his main conclusions were then briefly discussed. A few points of practical interest are here condensed from the report.

Joint Hospital Areas.

Dr. Parsons, in recommending the combination of districts for the provision of large central hospitals rather than small local buildings, shows that by the establishment of a single hospital in place of two or more hospitals, one site only has to be obtained, and the number of possible or feared foci of infection is limited; the duplication of various buildings and appliances is avoided, and the cost of fencing and other requirements, proportionately to the number of beds, is reduced. Thus, an isolation hospital, however small, would require provision for: (1) A ward block for patients, (2) quarters for the staff, (3) laundry and other out offices, and these, it is recommended, should be in separate buildings. Hence, having regard to the need for placing these buildings at a proper distance from the boundary and from each other, and, it may be, for ground on which to dispose of sewage and refuse, the site for a hospital, however small, can rarely be less than one acre. But the administrative and laundry accommodation which would be required for a hospital of only one small ward block would suffice, with comparatively small increase, for a larger ward block, or for two or even more ward blocks; and a site of two acres would thus afford space for buildings capable of holding many more than twice the number of patients who could be placed on a site of only one acre. A site of one acre, if rectangular and measuring 40 yd. by 121 yd., would require 322 yd. of fencing to enclose it, but a site of the same length, if 80 yd. wide, would contain 2 acres instead of one, and yet would require only 80 yd. additional fencing. Similarly with water supply, sewage disposal, and other matters, works which would be necessary for a hospital, however small, would serve with comparatively small additions for one considerably larger.

Local authorities sometimes contend that they can provide their district with sufficient means of isolation at less expense by separate action than by entering into a combination. This, however, generally means that they consider that a cheap temporary or existing building will suffice, or that some makeshift arrangement can be extemporised when infectious disease has broken out. Such expedients, however, are rarely satisfactory. The cost of procuring and adapting a site, providing water supply and drainage, and procuring furniture and other necessary equipment, greatly reduces the apparent advantage on the score of economy of a wooden or iron building over a permanent one; existing buildings erected for other purposes cannot readily be adapted to make satisfactory hospitals, and extemporised arrangements, such as tents and huts, which have to be erected when an outbreak occurs, are frequently not ready until too late to be of much use.

Structural Details.

Commenting on the suggestion that for the sake of cheapness the walls of hospital buildings might be constructed, in lieu of

brick or stone, of the more recently introduced materials, such as concrete, concrete blocks, Frazzi, etc., Dr. Parsons says: "The Local Government Board have in one instance (at Acton) sanctioned a loan for the construction of a ward block built of blocks of clinker concrete, keyed together in cement mortar and rendered outside with a coat $\frac{3}{4}$ in. thick of cement and sand, the structure being supported by steel stanchions 12 ft. apart, which carry the roof. The cost of the walls was 5s. 10d. per super. yard complete, and the total cost of the block for thirty-six beds, including roads and drains, but not furnishing, was £4,000, or £111 per bed. The cost per cubic foot was 4.66d., that of the original pavilions, which have hollow walls of brick, having been 6.9d. per cubic foot. But the comparison is not quite fair, as the new block is much longer, the main wards containing eighteen and sixteen beds respectively, whereas those in the older blocks contain only six and eight, and, the centre and ends of the block being nearly similar in each case, increased length of the wards does not add to the cost of the block proportionately to the increased number of beds."

The Question of Site.

The most frequent cause of excessive cost of isolation hospitals, and the hardest to avoid, is the difficulty of obtaining a suitable and convenient site. A local authority desiring to erect a hospital, in order to get a site at all, often has to buy a larger and more costly one than is necessary for the purpose, to give a higher price per acre than the land would be worth for any other purpose, and to incur heavy legal expenses in meeting opposition, and any site obtainable is often so situated as to involve much further expense in adapting it for hospital use.

The influence of the site upon the cost of an isolation hospital is by no means eliminated by reckoning the cost per bed as exclusive of site. If the site is remote from sewers and water mains, the cost of drainage and water supply may run into several hundreds of pounds, whether these wants are supplied by making connections of considerable length with the nearest public services or by constructing independent works on the site. Similarly, remoteness from gas or electric mains may involve expense in works for lighting. If the site is not on a good road expensive works of road making may be needed in order to secure a proper access. Sometimes the only site obtainable has been an old quarry or other excavated ground where much expense was involved in clearing and levelling the surface and in securing stable foundations; or, in other cases, the soft and treacherous nature of the ground or the risk of subsidence from undermining has added to the cost of foundations. If the site is far from a railway station, with bad or hilly roads, the cartage of building materials will add much to the cost of building, and may render it difficult to procure labour. All these extra expenses are liable to be debited to the cost of the buildings, and are not included in that of the site.

Concerning Competitions.

On this subject Dr. Parsons writes: Our experience would lead us to agree with the Board of Education report that competitions for plans are, as a rule, a waste of time and money. If the criterion adopted by the adjudicators be that of economy, there is a risk that the cost of the scheme may have been under-estimated by the successful competitor; if the criterion be theoretical completeness, it

may tend to adoption of schemes having features not useful in proportion to their cost. In some cases, schemes which have been adopted after competition have been found by the Board to require modifications which have brought them into semblance with other schemes which have been passed over, and this has caused satisfaction.

Lighter Buildings.

Apart from special circumstances, there may be advantages in the adoption of a somewhat lighter form of hospital construction with a shorter period of loan changes in the incidence of a disease in the methods of dealing with it, so that it may be obsolete for the purpose for which it was erected before the time when, as a building, it is worn out. Its useful life may be shorter than the structural life. Durability for all time need therefore be aimed at in the construction of an isolation hospital. For this reason a period of loan longer than thirty years for a brick building appears undesirable. As regards the durability of frame buildings covered with wood or rugged iron, much will depend upon original strength and careful construction of the buildings, and much also upon care taken of them and the due execution of repairs as the need arises.

Timber buildings deteriorate rapidly than brick or stone ones when occupied. For a frame building covered externally with weather-boarding or corrugated iron, and lined internally with plaster or incombustible material (match-boarding) a period of loan of twelve years, or perhaps even fifteen years might appropriately be allowed. (A period allowed by the Board for a building of brick or stone is thirty years.) But the later years of its life a frame building would require frequent expenditure of pairs to keep it in a habitable condition and it would be undesirable that in the payments of repayment of loan should have been made at the same time.

Cheaper Materials.

The Board would no doubt be willing to sanction the use in hospital construction of the more recently introduced materials and methods in any case in which it could be shown to be cheaper than ordinary materials in use in the localities. The report of the Departmental Committee of the Board of Education recommended that local education authorities should be encouraged to submit proposals for the use of novel materials or methods of construction for public elementary schools, and that a loan period of thirty years should be regarded as normally appropriate in such cases, instead of the period of fifty years allowed in cases where ordinary materials are used, but that it should be made a condition of approval that provision should be made for the periodical inspection of the structure.

"It must be remembered," says Dr. Parsons, "that as many of these special materials are not impervious to moisture, buildings constructed of them require to be coated with cement on the outside, that, owing to the thinness of the walls, more ample provision for warming is necessary than in brick or stone buildings. Until experience has been obtained of the durability, the loan period for such buildings should probably be shorter than those of brick."

The Standard of Air Space.

Dr. Parsons does not feel justified in recommending a less distance than 12 ft. between bed and bed in wards for a

es, unless the beds are separated from another by a fixed screen; but perhaps the concession might be made in other dimensions. It will be observed that the ward's present standards are not commensurable one with another, and that for a ward 24 ft. wide might conveniently afford 12 ft. of wall space and 156 sq. ft. of floor space per bed, it would be made nearly 14 ft. high (10.36 in.) in order to give 2,000 sq. ft. per bed. But in practice the additional space required in order to obtain the required 2,000 cub. ft. per bed is more useful if given as width of ward than as additional height above 13 ft., and the dimensions commonly adopted are therefore 26 ft. in width and 13 ft. in height, which give 156 sq. ft. and 2,028 cub. ft. per bed. But an increase of width from 13 ft. to 26 ft. involves a corresponding increase in floor, end wall, and roof, as well as a longer bearing and consequently increased strength of roof timbers.

Being, therefore, that the Board's standard would be complied with by a floor space of 144 sq. ft. per bed, with a height of 14 ft., and that the additional height of 13 ft. to 14 ft. is of comparatively little value for purposes of isolation and ventilation, I suggest that the Board should allow a standard of 1,872 cub. ft. head of 2,000 cub. ft., with a floor space of 144 sq. ft. and a wall space of 12 ft. as present. In single-bed wards, or compartments in which one patient is entirely separated from another with efficient cross-ventilation, a less amount of space might be allowed. Thus in the appendix to the Board's Hospital Memorandum the dimensions of the single-bed cubicles are 12 ft. by 12 ft. and 10 ft. high = 1,440 cu. ft.

MOUROS OF THE LAND DUTIES.

The Rev. Ernest E. Morris, Vicar of Bourne, Derbyshire, and Canon of Thwell, is happy in being able to extract from sort of humour from the Finance Bill. He writes:

Having made various returns in connection with the duties on land values under the new Finance Act, and having considered the duties demanded, I am now confronted with a courteous demand to value the historic church of St. Oswald, Ashborne, of which I have the honour to be vicar, together with the churchyard adjoining. *A propos* of the latter, I am inclined to ask if amongst the many 'extensive and peculiar' appointments of the present Government the services of a professional valuer have been secured. In any case I am called upon to answer this question: whether all usual tenants' rates and taxes are paid by the occupiers? But apart from this, how is such a building as Ashborne parish church to be 'valued'? It is in 1241, containing priceless treasures of art and antiquity, a source of veneration to the parishioners and of never-ending interest to the countless visitors who year by year are attracted to 'the Pride of the Peak'; is it to be valued as a place of worship? Or is it to be valued as a business establishment that might demand a higher rate as a cinematograph hall or marine museum? Is the churchyard, again, to be valued as agricultural land or as a desirable building estate? These questions I have submitted to a professional valuer, who acknowledges his inability to value the church and churchyard. To answer the list of questions which the valuer, in pursuance of his instructions 'to make a valuation of all churches and chapels,' has forwarded to me."

COMPETITIONS.

Parliament Buildings, Winnipeg.

Mr. F. W. Simon, F.R.I.B.A., of Liverpool, has been awarded the first premium (£2,000) in this competition. Mr. Simon is at present in Canada.

New Fire Station, Cardiff.

The awards in this competition (Mr. A. Marshall Mackenzie, A.R.S.A., F.R.I.B.A., architect) were announced at last week's meeting of the Watch Committee. The design placed first, and unanimously approved by the Committee, is by Messrs. E. Vincent Harris and T. A. Moodie, of London, who are the architects of the new Glamorgan County Hall, just completed, in Cathays Park, Cardiff. The second place (premium £75) is awarded to Messrs. Ivor Jones and Percy Thomas, of Cardiff; the third (premium £50) to Messrs. Mangnall and Littlewood, of Manchester; and the fourth (£25) to Messrs. Willmott and Smith, of Cardiff. The designs are being exhibited from October 2nd to 9th at the City Hall, Cardiff.

LIST OF COMPETITIONS OPEN.

OCTOBER 7. ELEMENTARY SCHOOL, BECKENHAM.—Limited to selected architects. Mr. A. W. S. Cross, F.R.I.B.A., is assessor.

OCTOBER 14. PUBLIC SWIMMING BATH, BALHAM, S.W.—Wandsworth Borough Council invite designs for a swimming bath to be erected at Balham. Conditions, schedule of accommodation, and plan of site may be obtained from Mr. P. Dodd, M.Inst.C.E., 215, Balham High Road, S.W., on deposit of £1 is. Designs to be sent to Mr. D. A. Nicholl, Town Clerk, Council House, Wandsworth, S.W.

OCTOBER 29. EXTENSION OF MUNICIPAL BUILDINGS, GLASGOW.—The corporation invite preliminary sketch designs for an extension of their municipal buildings. From the sketches submitted, the authors of not more than five designs will be selected for a final competition, at an honorarium of one hundred guineas each. Mr. John J. Burnet, LL.D., A.R.S.A., is assessor. Conditions (one guinea, returnable) from Mr. J. Lindsay, Town Clerk, City Chambers, Glasgow.

OCTOBER 31. LAY-OUT SCHEME, LLANDUDNO.—Designs are invited for lay-out of about 20 acres of ground adjacent to the Happy Valley. Particulars from Clerk.

OCTOBER 31. TOWN PLANNING, HUDDERSFIELD.—The Housing and Town Planning Committee of Huddersfield Corporation offer premiums of 100, 50, and 25 guineas for laying out certain areas. Conditions (two guineas, returnable) from K. F. Campbell, M.Inst.C.E., Borough Engineer, 1, Peel Street, Huddersfield.

NOVEMBER 1. KING EDWARD MONUMENT, OTTAWA.—Sketch models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

DECEMBER 2. SCHOOL BUILDINGS, CARLISLE.—Particulars, City Surveyor, Carlisle.

MARCH 1, 1913. MUNICIPAL BUILDINGS, RANGOON.—The committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars £1 (returnable) may be obtained from the London Agents, Messrs. Ogilvy, Gillanders, and Co., Sun Court, 67, Cornhill, E.C.

FIRE-PROTECTED RAILWAY CARRIAGES.

The question of the possibility of constructing fire-protected railway carriages, raised by the terrible disaster at Ditton Junction, will doubtless receive more attention in view of the statement that was made by the chairman at the half-yearly meeting of the Underground Electric Railways Company of London, Ltd., that steel cars are exclusively used on the tubes, and that since the opening of the London Electric and the electrification of the District 929,315,363 passengers have been carried without a single fatal mishap due to a failure in the rolling stock.

On the subject of whether it would be practicable for rolling stock to consist of fireproof carriages, an expert directed the attention of a representative of the "Morning Post" to the steel trains in America and to the tube railways in London. He pointed out that of the carriages on the tubes only the arm-rests and flooring are of wood, but this is treated in such a way that a fire would be impossible. The process is to subject the wood to a very high temperature. All the natural juices and sap are burnt out of it by impregnating it with salts. After this treatment the wood may blacken and char, but it will not smoke or burst into a flame. Of the last rolling stock ordered for the tubes the only wood used is for panelling and doors, but it is all made fireproof. It is recognised that on the tube and District railways a fire would be more alarming than would be the case in the open, and therefore every precaution has been taken to make a fire impossible.

Asked whether it would be feasible to adopt the steel coaches on ordinary railways, the expert expressed the view that there was no insuperable objection to their universal adoption. "On the other hand," he added, "from the point of view of safety there are many forcible reasons in their favour. The old wooden carriages are out in the sun all the summer, so that when a fire occurs they burn like tinder. With a steel coach it would be impossible for schoolboys out for pranks to cause a fire such as occurred the other day. One objection raised against the steel coach is that it makes more noise on account of the vibration. Then there is the question of heat and cold. Wood is ideal for construction work because it is a non-conductor. It is warm in winter and cool in summer. When you get metal the protection is comparatively poor. There is, in my opinion, no physical reason against the adoption of steel coaches on our railways. And it is conceivable that if they were fitted with corrugated buffers, which means a central buffer, telescoping would be averted.

"As to the lighting of trains, it is too late in the day to discuss, from the point of view of public safety, which is to be preferred—gas or electricity. But it is clear that with electricity as the illuminant there could be no burning carriages."

Wood which has been chemically impregnated so that it will not catch fire has been in use for many years past on some of our leading railways. The whole of the woodwork of the cars of the Metropolitan, District, and the three new London Tube lines has been rendered fireproof. A statement made by an authority on the carriage-building industry, that fireproof wood had the disadvantage that screws would not hold in it is, it is declared, totally incorrect so far as at least one process is concerned.

NEWS ITEMS.

English Medieval Figure Sculpture.

A volume on the above, by Professor E. S. Prior and Mr. Arthur Gardner, will be published shortly by the Cambridge University Press, price £3 3s. net.

New Opera House at Venice.

On a site opposite the Excelsior Hotel in Venice a new opera house is being erected. Seating accommodation is provided for an audience of 2,000.

A New Kingsway Building.

The London County Council have disposed of an extensive site at the corner of Sardinia Street, in Kingsway, on which it is proposed to erect offices for the Lunacy Commissioners.

New Picture Palace at Leigh, Lancs.

A picture palace to accommodate about a thousand people is to be immediately erected at Leigh, Lancs. Messrs. J. C. Prestwich and Sons are the architects.

The New King's College Hospital.

Messrs. James Slater and Co., of London, W., are carrying out the heating, ventilation, hot-water supply, central boiler room plant, etc., at the new King's College Hospital now being completed at Denmark Hill from designs by Mr. William A. Pite, F.R.I.B.A.

Change of Address.

We are requested to state that as from September 29th the professional address of Mr. Alan E. Munby, M.A., A.R.I.B.A., architect, is 9, Old Square, Lincoln's Inn, London, W.C. Telephone number: Holborn 4630. Old Square is approachable directly from Chancery Lane on the east, as well as from Lincoln's Inn Fields on the west.

New Secondary School at Hereford.

A new secondary school for boys at Hereford that has just been ceremonially opened by Sir James Rankin, Bt., Chief Steward of the city, has been erected by Messrs. Wilkes and Son from plans prepared by Mr. Jack, county surveyor, cost £10,250, and is the largest institution of its kind in the county.

Mr. W. H. Ward on French Renaissance Architecture.

Among the public lectures that have been arranged to be delivered at University College, London, is one by Mr. W. H. Ward, M.A., F.R.I.B.A., on "The French Renaissance in Architecture," on Thursday, October 10th, at 6 p.m., when Mr. Spencer W. Morris, Master of the Worshipful Company of Carpenters, will preside.

Oxford Colleges.

Mr. B. T. Batsford announces that he will publish in November an important folio volume on "The Old Colleges of Oxford," by Mr. Aymer Vallance, M.A., F.S.A. The book has been in preparation for some years, and is dedicated by special permission to His Majesty the King. The author's scheme is to trace the architectural history of the University Church, the old schools and the colleges, exhibiting them in the condition in which they stand at the present day, as well as many vanished features, depicted by famous contemporary artists from the sixteenth century onward. Care has been taken to

include among the illustrations a large number of fine specimens of the splendid craftsmanship in ironwork, lead, and plaster, in engraved brasses, painted glass, and figure sculpture, with which the ancient fabrics abound. The volume is being offered to subscribers at a special price until October 8th.

Free Site for a Free Library at Wallsend.

Dr. G. B. Hunter, chairman of directors to Messrs. Swan, Hunter, and Wigham Richardson, Ltd., has offered to Wallsend Town Council a free site in Laburnum Avenue, Wallsend, for a free library, providing the council will comply with the conditions attaching to Mr. Andrew Carnegie's offer of £5,000 towards the cost of the building.

A Month of American Fire Losses.

Fire losses in the United States and Canada during August amounted to £2,831,760, as compared with £2,532,530 for the corresponding month a year ago. It is feared that as the fire losses this summer have not been sufficiently light to counteract the very unfavourable experience of January and February, the year's results will prove to be unprofitable for fire-insurance companies.

An Old Herefordshire Manor.

Messrs. Driver, Jonas, and Co. have sold by private treaty, with 418 acres, Hergest Court, the old Herefordshire manor house at Kingston, the dwelling place of the Vaughans and their descendants from its erection, about 1430, till the end of the seventeenth century. Features of the place are the old oak carving, still in fine preservation, and two Jacobean tables.

A French Garden City.

Four hundred French workmen have raised a sum of £24,000 and purchased the Château de Draveil, in the Seine-et-Oise Department, which has a park laid out by Le Nôtre in the reign of Louis XIV. Four hundred dwellings will be erected on the estate, all the finest portions of which will be preserved as open spaces for the common enjoyment of the colony. The Château will become a clubhouse, while its dependencies will be utilised as a restaurant and shops.

St. Bartholomew-the-Great, Smithfield.

The usual lectures on the history and architecture of the church of St. Bartholomew-the-Great, West Smithfield, will be resumed on Saturday afternoons October 12 and 19, at 2.30 p.m. The stone coffin and the interesting worked stones recently found on the site of the Chapter House of the priory will be on view in the cloister. No fees of any kind will be charged, but a collection will be made for the restoration fund. Students of architecture, professional or otherwise, will welcome these opportunities of inspecting London's oldest church.

A Hint on School Sites.

At a meeting of the Manchester Education Committee the chairman (Sir Thomas Shann) said that something must be done to obviate the noise caused outside schools by the increasing traffic. As a result of it, windows at many schools had to be kept closed, and this was not healthy. It was for the Paving Committee to see that the roads near the schools were paved so that there was the least possible noise. The teachers seemed to be at their wits' end in the matter, and they appealed to the com-

mittee to help them. Sir Alexander Porter agreed, and advocated noiseless pavements. The health of the teachers, he said, was impaired by the strain they were put on. Mr. W. F. Lane-Scott put some of the blame on the trams. He suggested double windows. Alderman Turnbull said the Highways Committee had decided to use rock asphalt wherever possible in the vicinity of schools. The obvious moral was that no more schools should be built on highways.

The Statue of Liberty for Manila.

The Statue of Liberty which the United States Government is presenting to the Philippine Islands, and which will be erected at Manila in the near future, has been completed by the Swiss sculptor H. Kissling, whose design, it will be remembered, was chosen in an international competition. The statue, which will have a height of £240,000 when delivered at Manila, is a huge work in bronze, consisting of a series of lifesize figures dominated by the figure of the Philippine national hero, José Rizal. The monument has been placed in position at the station of Wassen, Canton of Uri, to await inspection from the American commission of experts, after which it will start on its long journey across the seas.

"Two on a Tower."

The movements of a couple of workmen on the summit of the flag-pole on Victoria Tower of the Houses of Parliament last week, naturally attracted a good deal of interest. The height of the tower alone is 336 ft.—indeed, it is the largest square tower in the world—and if to this is added the flagstaff itself, it will be seen that the exploit was probably the loftiest piece of work of the kind ever performed in London. The Nelson Column is about 220 ft. high, and the Monument to the City is no more than 202 ft. The Clock Tower of the House of Commons is 315 ft., and the towers of Westminster Abbey are 225 ft.

Liverpool Masters' Concessions to Labour.

Negotiations have been in progress between the Liverpool Master Builders' Association and the District Committee of the Navvies, Builders' Labourers' General Labourers with respect to workmen's demands for improved conditions. Two conferences, just terminated, have settled the dispute. The men have gained increases in the rates of pay, rules have been fixed for the payment of overtime at advanced rates. A minimum of 6d. an hour for navvies and labourers has been agreed upon, and overtime to be paid at the rate of time and a quarter for the first four hours and time and a half afterwards. Work done on Saturday afternoons is to be paid for at the rate of time and a quarter for the first two hours, time and a half till Saturday midnight, and double time to six a.m. Monday. Christmas Day, Good Friday and Bank Holidays count as Sunday and double time being paid.

OBITUARY.

Mr. George Wilson.

The death occurred on September 29th of Mr. George Wilson, architect. Messrs. Sydney Mitchell and W. Young Street, Edinburgh. He was formerly an assistant to Sir Robert Anderson.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, October 2nd, 1912.





Photo: "Architects' and Builders' Journal."

THE DOME OF THE WESLEYAN HALL, WESTMINSTER: VIEW FROM THE WEST (REAR ELEVATION).

LANCHESTER AND RICKARDS, FF.R.I.B.A., ARCHITECTS.

THE
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(From Piranesi.)

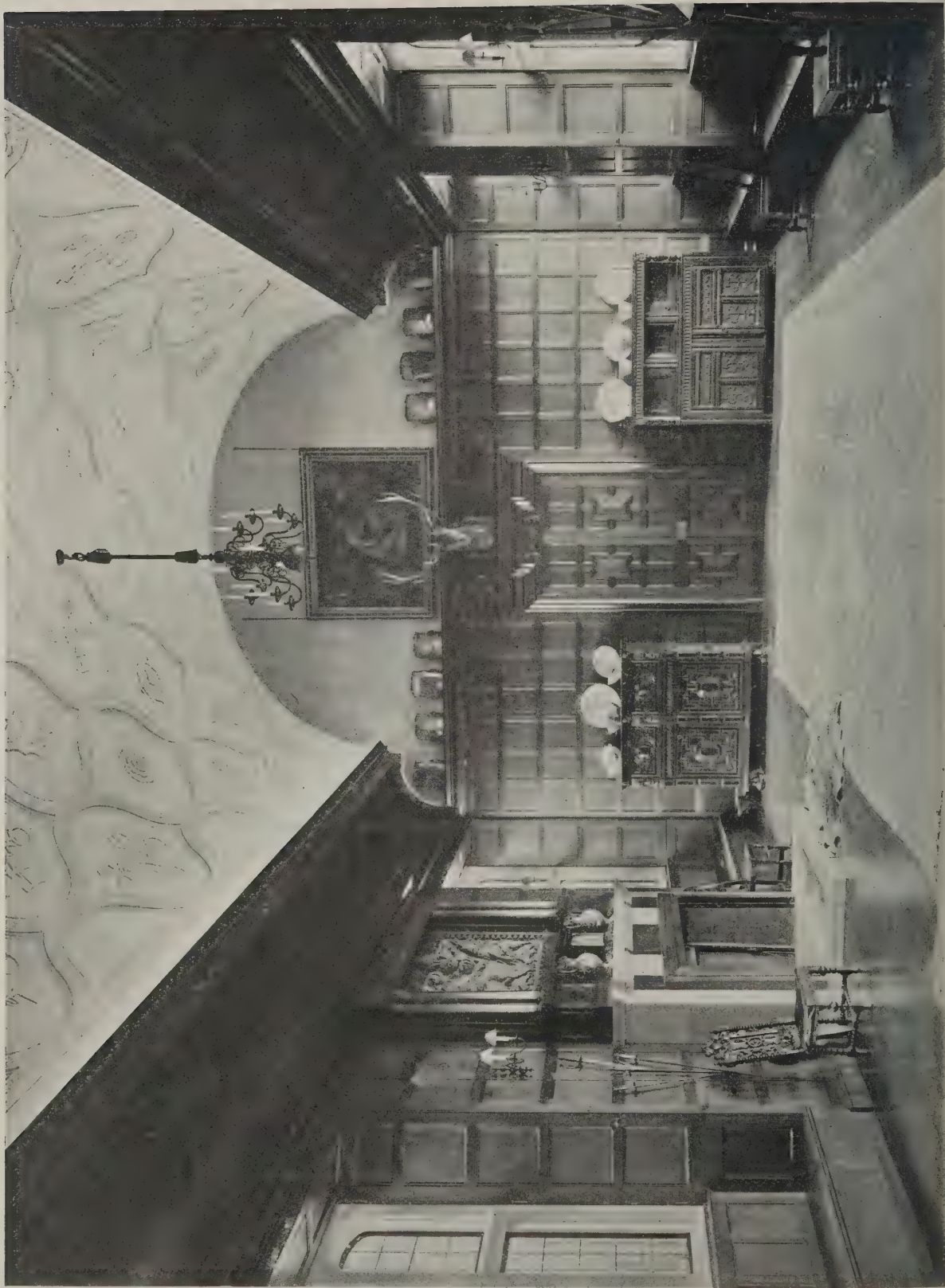


Photo: Thomas Lewis.

THE ARCHITECTS' & BUILDERS' JOURNAL.

OCTOBER 9th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 925.

The Thames and London.

THOSE who have a real knowledge of the Thames and all that its magic name implies are the more fully equipped to appreciate the character of London. For the waterway is the main artery along which the life-blood of the city courses, connecting yet dividing a duality, pulsating with the tides, breathing of the sea, and wedding the capital of the Empire to distant seas. To comprehend the grandeur of the *mise-en-scène* the eye must travel from the Palace of Westminster, along the bend of the river, to where the dome of St. Paul's holds sway over innumerable underlings. Ten square miles closely packed with buildings must be glanced at in a minute.

In the courtyard of Somerset House is a bronze group on a stone pedestal; a colossal figure of Father Thames reclines with urn and cornucopia, while dominating the group from a higher plane a statue of George III., garbed in Roman toga, and attended by a lion couchant, stands against the rostra of a galley—a benign hortator whose gavel is a rudder. In this beautiful group of statuary the sculptor has symbolised the relation of the river to the City. Not only does it commemorate the erection of the finest of our official buildings, but it marks the dawn of a new era in English history—the age of modern activity. At this date England had yet to experience humiliation at the hands of her American sons, to begin her tremendous struggle with France, to explore new continents, to overthrow the genius of Napoleon, and finally to emerge impoverished though victorious. Merely to peruse the list of distinguished men whose lives are intimately connected with this period would not enable us fully to understand the great heritage we now enjoy. What makes the most direct appeal to the imagination is the concrete embodiment of intellectual activity expressed in terms of architecture. Remove from their setting the precious stones which now enrich the northern shore, what aspect would London present? A king of folly deprived of cap and bells. Who could deny to Wren his many triumphs; who could fail to admire the storied terraces of Somerset House, which formerly rose sheer from the water: who can restrain a joyous thrill on beholding the Palace of Westminster, Barry's immortal grouping, refined and enthralling with intricate jewellery fashioned by the genius of Pugin? These are the works standing forth as the richest of London's treasures. Co-ordinated by Bazalgette's embankment they satisfy the Englishman's love for the real and the permanent. In the grand sweep of the northern embankment, now being extended beyond Westminster, exists an architectural asset of superlative merit. No doubt the future will see the embanking of the southern shore. A dream of futurity embraces a grand river boulevard running from Southwark Cathedral to Hampton Court, linking the Cathedral to the Palace at Lambeth, ending Battersea Park a river frontage and extending to Wolsey's Palace. When this project is realised

(and all things imaginable are possible), may the gods direct the Amphictyonic League who undertake the task.

If the northern embankment presents a continuous and harmonious effect, the southern shore is sharply defined as an excrescence on the countenance of the City. The time has long since passed for us to express our rapture over the merely picturesque; we can sympathise with the views drawn for Malton's celebrated tour, we can delve into the volumes of sketches assiduously collected by Crace, but the present demands improvement.

If the waters of the river divide, they also connect, for the common interest of the citizens of the dual city are centred upon the great waterway. For greater convenience quasi-architectural structures span the river, viaducts of masonry, intricate webs of steel. Foreigners often remark with surprise on the small number of bridges crossing the Thames, and contrasted with the Seine the number is few. We do not desire more, rather we devoutly wish for the decree to go forth for the abolition of railway bridges. When it is remembered that little more than a century and a quarter ago communication between north and south was maintained by only three bridges, the immense strides made during the early years of the last century appear the more remarkable.

Old London Bridge survived, with continual patching, from mediæval times until 1823, when the present structure was erected from the design of Rennie, by his talented sons George and John. Previous to this very necessary rebuilding, between the years 1739 and 1750 Labeyrie carried out the stone bridge at Westminster; this structure was followed by Mylne's design for the old bridge at Blackfriars, which was completed in 1770, the work having occupied nearly eleven years. The design of the latter structure evidently suggested a prototype to Rennie, especially for the architectural *motif* displayed, when he prepared his design for the Strand, now Waterloo Bridge. Canova declared the latter to be the finest work of modern times; its nine elliptical arches of equal span and rise, springing from cutwaters surmounted by Dorian pylons, suggest a Cyclopean theme. The genius of John Rennie inspired him to employ gigantic iron castings for Southwark Bridge, which he commenced in 1814, and which was opened for traffic in 1817. It is noteworthy that the three finest bridges crossing the Thames are the product of one master-mind; and, moreover, were inspired by the pursuance of a great tradition. Waterloo Bridge dramatic and monumental, Southwark Bridge fairy-like and dainty spanning the waters in three moves, London Bridge silvery grey, solid, and unpretentious. Of the more recent bridges but little can be said in praise of their appearance. The Tower Bridge is a clever toy; the railway bridges, red with rust, lack urbanity; the modern Blackfriars viaduct is smug and Victorian; and Father Thames is now threatened with another load in the shape of the new bridge at St. Paul's. Is not the time ripe for the public to inquire into such projects?

R.

The New Delhi.

THE building of a new capital for our Eastern Empire has fired the popular imagination, as well it might. On all sides suggestions are being put forward as to the style of architecture in which it should be built. We believe in the highest quarters the opinion has been expressed that the city should be fashioned in some unspecified Indian style. Other less exalted personages, with, to our mind, more sense of fitness, see in this new city the symbol of our own imperial rule, and wish that rule to be clearly expressed in its architecture. The very fact that there is any debate at all shows how far from faith we have fallen. If we had the same belief in ourselves as builders that we appear to have in our right and power to administer the destinies of the hundreds of millions of India's population, no question would arise. Rome never hesitated to erect the monuments and symbols of her power in every land she ruled. Either we should not be in India at all—and that is a proposition some may still care to argue—or we should not attempt to hide ourselves under some hypocritical cloak of half-adapted Indian architecture. We know too well from past experience what Indian architecture designed by English architects or by officials of the Public Works Department means. We know how it fails to-day, even when designed by natives, so deeply have our Western ideas permeated. The Victorian Gothic of the public buildings of Bombay and elsewhere is no better—indeed, rather worse. If it was an affectation with us, it became a doubly-dyed affectation when planted on Indian soil. There remains, then, what we call to-day Classical architecture; but it must be the Classical architecture of to-day and not that of any past period, however brilliant. Each age is forced to produce its own particular variant of the fundamental forms of Greek and Roman architecture. From those fundamental forms we can no more escape than we can escape from Greek and Roman ideas in our laws and life. Let us, therefore, build Delhi in our own synthesis of the Classical formulæ, not in that of Wren nor of Jones, nor even of the nineteenth century. If we do not honestly attempt this we shall only write ourselves down as incompetent and unworthy of the task; we shall be hypocritical in only a less degree than if we attempted some Indian style, the spiritual meaning of which we neither care for nor understand.

Memorials.

IT is taken for granted that as soon as any public man of note is laid in his grave a movement must be started to erect a monument to his memory. The motives which prompt this desire are excellent, but more often than not an unfortunate result is achieved in carrying them out. It is necessary, first, that we should restrain our ardour in this direction, for the monument is likely to remain long after the man commemorated is remembered. Thus we have in the Abbey great masses of carved marble erected to the memory of men who, as we now see, deserved no such distinction. But, in any case, it behoves us to see that the memorial is a good thing in itself. And as in this country to-day it is very problematical whether such a result will be achieved, one welcomes rather the provision of some useful institution, or some endowment, as assuring a positive result in which we can take satisfaction. In our towns and villages the combination of the utilitarian and the artistic has given us those unfortunate devices—the drinking fountain and the clock tower; things admirable in themselves, but, as we know them, very sad to contemplate. Who is not familiar with the drinking fountain standing forlorn on its little platform by the roadside—an attraction not for the passer-by (because few people are thirsty in the places where these fountains are deposited), but for the small boys of the neighbourhood, to counteract whose attentions it is necessary to fit the water-supply

with such a press-button that nobody without a giant strength can get an adequate supply. Public clocks are an improvement on public fountains, without doubt, but the examples so far erected do not make a clamour for more of the sort. After all, there are on two satisfactory solutions, either to devote the money available to some such completely practical purpose as a hospital ward, a cot, or a public ambulance, or to erect a memorial pure and simple; and, if the latter, see that it is placed in a situation—preferably in some park or enclosure—where people are likely to be in a mood to appreciate it.

Regent Street Quadrant.

THE appointment of the small committee to consider the rebuilding of Regent Street Quadrant has brought the whole problem once again to the front, and from the opinions which have been expressed by the shopkeepers during the past week seems likely that there will be a continuance of the *passé* unless a radical alteration is made in the proposed design. We would, therefore, urge both sides to make concessions. After all, the shopkeepers cannot insist on the rebuilding being carried out exactly as they would like—that is to say, with no other consideration than those of business, nor can the Crown throw the existing design at the shopkeepers and say that nothing else will be offered. The Crown cannot force the shopkeepers to build to a design which they strongly denounce; it is not as though a public monument were in question; on the contrary, both sides are faced with business considerations. The points on which they insist on are that the shopkeepers must recognise that there are civic duties imposed on them by their being in a fine civic thoroughfare, while the Crown must recognise that an adequate amount of window space is absolutely necessary for the shopkeepers' business. With the appointment of the committee, however, which includes some level-headed men, we are anticipating a satisfactory solution.

An Injustice in Regard to Road Repairs.

THE motor vehicle is reducing the roads of this country to a parlous condition, and an outcry is being raised by ratepayers who have to pay for the cost of repairs to the roads. In suburban London particularly, the feeling on this matter is acute. Tallin, Richmond as an example. This is now fairly in the grasp of the giant octopus of London. The newer conditions have brought with them the motor omnibus and this noisy, heavy vehicle has not only shattered the nerves of those whose misfortune it is to live on the routes traversed, but it has also torn up the roads to such an extent that altogether new surfaces are required. Consequently, a long stretch between Richmond and Kew is now about to be laid with wooden blocks, for which the ratepayers will have to pay to the extent of an additional 6d. in the £. Meanwhile, the omnibuses travel over side streets which were never intended for such traffic, and, having there broken pipes without number, pass along to do further damage; the consequences of which diversion the ratepayer also has to bear. It is the same all around London. One may well ask, therefore, why the Road Board should not contribute towards the cost, and why the motor-bus companies should go scot free? The Road Board, we are told, is authorised to make advances "in respect of the construction of new roads or the improvement of existing roads," and "to contribute towards the cost of the maintenance of such new roads," but not of the old ones. The question, however, the ratepayer is asking is, Why should he bear the expense of repairing the damage done to roads by swarms of vehicles which come uninvited to his district, destroying his peace of mind and emptying the houses on the thoroughfares over which they pass?

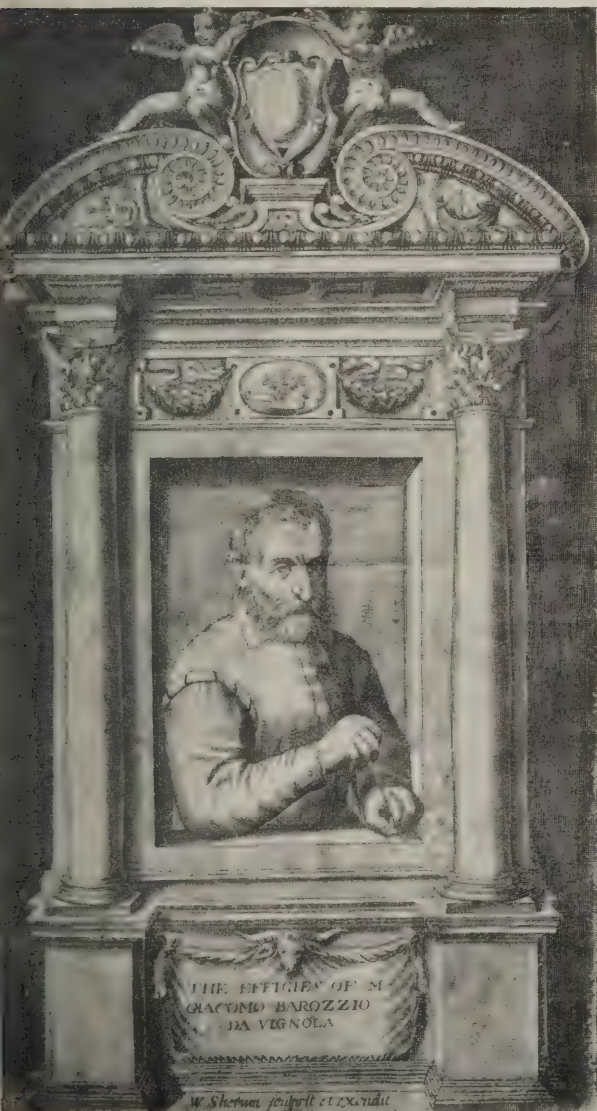
GREAT ARCHITECTS OF THE RENAISSANCE.

I.—Jacopo Barozzio da Vignola.

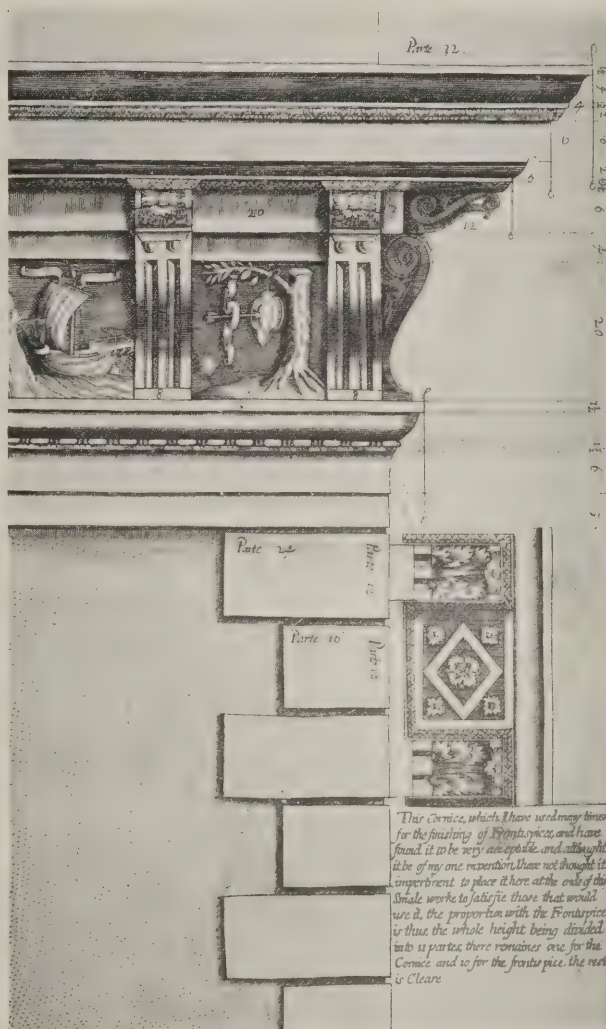
BY H. H. STATHAM, F.R.I.B.A.

THE architects who took a prominent part in the development of Classical ideals in architecture which became known as the Renaissance occupy a rather peculiar position. They were for the most part as much theorists as practitioners. They nearly all produced great books on the true principles of ancient Roman architecture; some of them produced little else than books, which few people now read or look at, but which have, nevertheless, kept alive the names of their authors. Perhaps the books have more effect on the mind when thought of only as "a permanent possibility of sensation," for the actual examination of them is sometimes disappointing. If, however, we try to put ourselves in the position of the Italian architects of the early days of the Renaissance we may realise that from their point of view there was a good reason for writing books on the Orders and the proportions to be observed in them, with the addition of adequate illustrations. The feeling was fresh in men's minds that the remains of the great works of the Romans, which were to be seen all over Italy, represented something far higher than anything in archi-

ture that had been done since the days of Rome. This spirit in architecture was to be revived by the study and the imitation of Roman remains. How necessary, then, that the latter should be studied in an intelligent spirit; how unfortunate if we should only



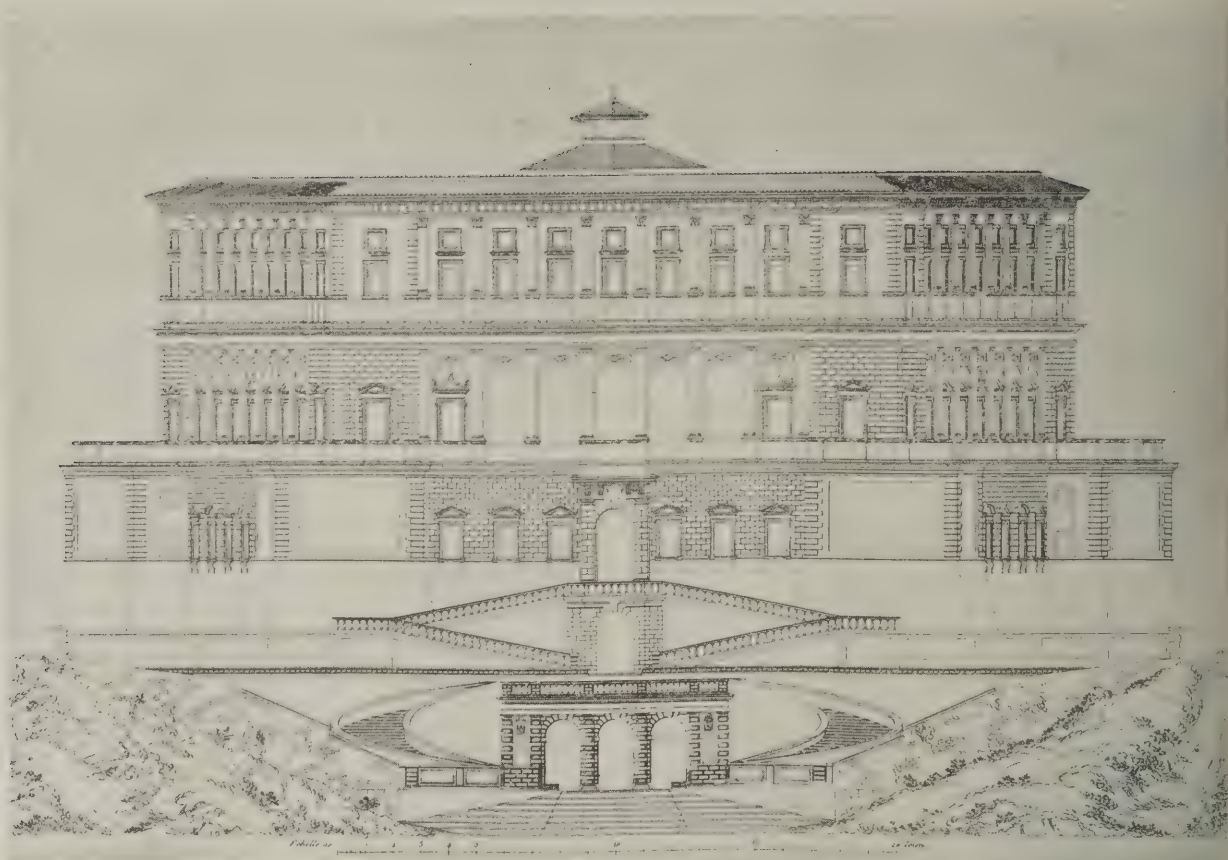
FRONTISPIECE TO "THE REGULAR ARCHITECT" (1669), WITH PORTRAIT OF VIGNOLA.



A CORNICE DESIGNED BY VIGNOLA.

interpret them wrongly and imitate them in a clumsy and incorrect manner! This was obviously the consideration in the mind of Vignola, who set about his task in a much more practical spirit than some of the illustrators of the Orders; much more practical, too, than that of Vitruvius, as far as design is concerned. As regards operations of building, Vitruvius was evidently a most practical man, but as to the proportions of parts in an Order, with one or two exceptions he has no reasons to give for them; it is the rule, and that must be sufficient for any well-regulated mind. Vignola made his inquiries into architectural proportion in a much more rational spirit.

As was so often the case with clever artists of the mediæval and Renaissance periods, the picturesque and dignified name of "Vignola" was not the architect's real name; it was that of the village, near Modena, where he was born, his father's name being Barozzio (sometimes also written Barozzi). In somewhat earlier days, and in some cases even at this period



Principal Elevation.



Perspective View (Percier et Fontaine).

VIGNOLA'S CHIEF WORK: THE PALACE OF CAPRAROLA, NEAR VITERBO, ITALY.



SMALL CASINO OR PAVILION, IN THE GROUNDS OF CAPRAROLA, BY VIGNOLA.

the Renaissance, an artist had hardly even a known name; he was John of Douai, or William of Sens. Vignola managed to keep his surname, and was Jacopo Rozzio "of Vignola," and hence came to be habitually spoken of and chronicled as "Vignola." The date of his birth is given as October 1st, 1507. He commenced to study as a painter at Bologna, but either by himself or by others his attempts were not considered successful. He felt, however, that at least he understood perspective, and he produced an elaborate treatise on that science, the diagrams of which have a remarkably modern appearance, and might for the most part have come out of any modern treatise on the subject. His removal to Rome in 1535 was the beginning of his becoming an architect, just as the visit to Paris made Wren an architect. He there met with Bramante, a very inferior man to himself, but who had acquired favour with Francis I., and had been concerned (probably) in some of the work at Fontainebleau. Vignola accompanied him to France for a time, and has even been credited with having designed the Chambord—an ascription which, comparing it with the known and accepted designs of Vignola, seems absurd; the only kind of excuse for the idea, and one which perhaps gave rise to it, is the existence there of a central circular staircase, which is somewhat similar in arrangement to that at Caprarola. Chambord is, in fact, so intensely French that one can hardly imagine an Italian architect having a hand in it.

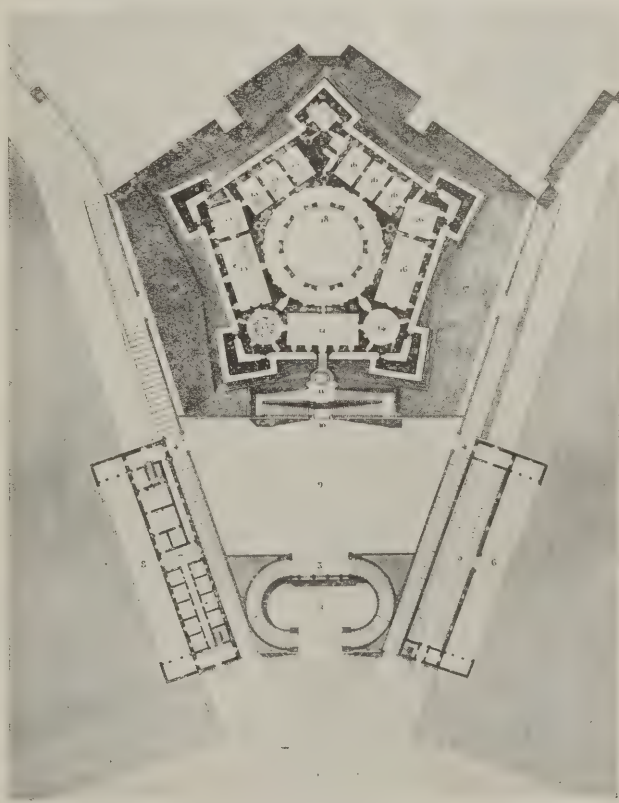
If we disregard, as we probably must, this Chambord tradition, nothing especially seems to have resulted from Vignola's visit to France; and the subsequent bent of his genius was probably largely determined by the fact that he was commissioned by the Vitruvian Academy, which had been founded in 1542, with the task of the investigation and measurement of the ancient monuments in Rome. Evidently at this time, at the age of thirty-five, he was recognised as a person of exceptional architectural talent, who could be trusted to carry out such an important piece of work in the best manner. He was already in practice to a considerable extent at Bologna (having produced among other things a design for the proposed church of San Petronio, which was never carried out), but it is probable that the special study to which he was led by his commission from the Vitruvian Academy fixed the bent of his further career, and led up also to the publication of his important book on the Five Orders of Architecture, "Regola delli cinque ordini d'architettura," the result of his close acquaintance with and measurement of the remains of Roman architecture.

An English edition of this book, under the title "The Regular Architect," was published in 1669, translated

and edited by one John Leeke, from which we may take Vignola's statement of his motive in publishing it, and of his manner of looking at the subject. He wished to know, not only what the rules for proportion were, but how they operated in producing a satisfactory architectural effect. This is his statement, in the words of his translator:—

Having exercised this art of architecture for divers years in sundry places, I have been always pleased to see the opinions of as many writers as I had concerning this practice of the ornaments, and by comparing them with themselves and with the works of the ancients, which are yet seen in being, to draw from hence some rule on which I might rely with such security, as might please, if not all, yet the greater part of those that are capable to judge this art, and that only to serve my own use, without any other end.

He goes on to say that, examining the antiquities of Rome, he found that those that seem most beautiful, and represent themselves with the most grace before



GROUND-FLOOR PLAN OF THE PALACE OF CAPRAROLA.

our eyes, "those, I say, have a certain correspondence and proportion of numbers among themselves, *not intricate* [the italics are my own], seeing that each or the lesser members measure the greater, punctually distributing them into so many parts, as the musicians have well shown also in their art." Obviously, his idea was to take note of those ancient buildings which were most generally admired, and to endeavour to find out, by measurement, the secret of their success; and this he finds in the fact that there are relative proportions in their different parts, "not intricate," that is, they were simple ratios which could be expressed in low numbers; and that it was the same in music. This is a very good parallel; harmonies in music are between notes of which the vibrations are in simple ratios—1 to 2, 2 to 3, 3 to 4; when they are less simple than that they become discords; and Vignola concludes that the best effects of proportion in architecture are produced by

simple ratios in comparative size. He was probably right, and his conclusion reminds one of a suggestion that has sometimes been made in regard to Greek architecture—namely, that the Greeks saw proportion of parts in buildings as we moderns hear proportion in musical sounds, and that their eyes were as much offended by a disproportion in the relative sizes of details as our ears are by discords in sounds. It is quite possible that it may have been so, and that the Greeks had a way of looking on architectural design which we hardly realise, and which has dropped out of recognition now. At all events, the idea put forth by Vignola is worth taking into consideration.

The book shows a number of large drawings of the several Orders, in the somewhat coarse engraving of the period, but they are not all mere representations of this or that ancient example; on the contrary, he notes on several of them that he has made up the Order by details taken from or suggested by different remains of buildings, such as he thought worked harmoniously together, so that there is something of invention in the plates as well as mere illustration. He adds one entirely of his own, which he calls "Cornice for the Palace" (Plate 31 in "The Regular Architect") in which the soffit of the corona of the cornice is supported, in front of a very deep frieze, by a series of finely designed brackets or consoles, placed vertically one under each modillion. The inscription on the plate makes a kind of apology for introducing this:—

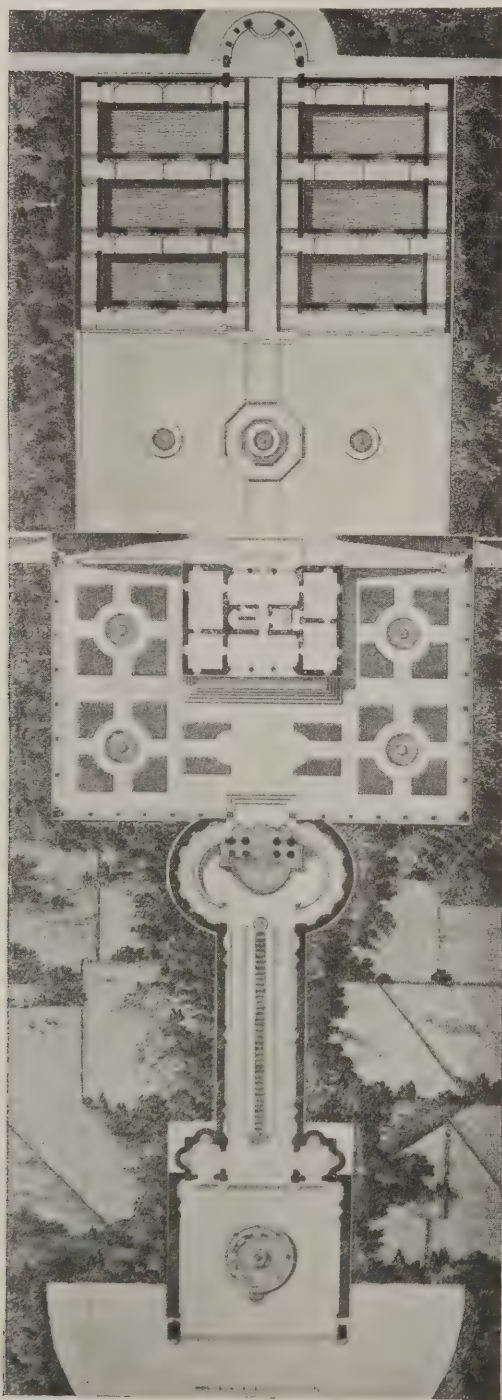
This cornice I have used many times for the finishing of Frontispieces [what we should call "façades"], and have found it to be very acceptable, and although it be of my own invention, I have not thought it impertinent to place here at the end of this small work to satisfy those that would use it. The proportion with the Frontispiece is thus: the whole height being divided into eleven parts, there remains one for the cornice and ten for the Frontispiece; the rest is clear.

I have retained John Leeke's old-fashioned spelling but have assisted his grammar a little, which is rather shaky. From the accompanying reproduction it will be seen that the effect of the console cornice is fine and powerful; it is a device which has been used from time to time, perhaps by some who were not aware that it was Vignola's invention.

Vignola, however, was no mere book architect. His great work, as far as now existing, is, of course, the Caprarola Palace (1547-1559), built on a site near Viterbo, for Alessandro Farnese. This, which is of the unusual plan of a pentagon, represents a distinctive conception in architecture, both in plan and design. The only modern building so distinctive in plan is perhaps Girault's Petit Palais at Paris. The grounds around the palace and in direct relation to it are designed to include terraces, built pavilions or grottos, formal gardens, etc. The palace itself is treated with a grand simplicity in the use of Classic materials. There is an Order of pilasters in each of the two main storeys except near the angles of the pentagon, where in the ground storey a mass of plain rusticated walling is introduced to give a greater look of solidity. Among the subsidiary buildings is a fine pavilion, a long parallelogram vaulted in three bays, with arched openings between the piers, and a semi-circular niche at each end. The design of the balusters to one of the terraces shows a great deal of delicacy of detail in profile. The architect evidently gave himself to the building *con amore*, bestowing care and thought on every detail.

Among other designs which show Vignola's strong originality is the small church of S. Andrea at Rome, a parallelogram about half as long again as its width with projecting piers near each end defining a square central space; the church is roofed by a low dome of elliptical plan, the drum of which, with its own cornice rises above the main cornice of the building.

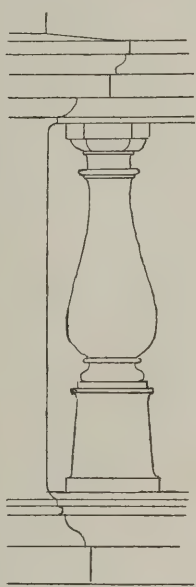
In his treatment of smaller structures in more completely Classic style, such as arches, porticos, and doc-



CAPRAROLA: PLAN OF SMALL CASINO
AND GROUNDS.

ys, Vignola shows the same kind of strong and vigorous style which we see in the work of Inigo Jones, who, indeed, was probably more or less indebted to the study of Vignola. He uses the resource of rustication with great effect; in one design for an archway the whole is a mass of very powerful rustication with very deep and wide channeling, cut square in section; the capitals of the pilasters, which are supposed to exist behind it, showing above the top course of masonry. This may be said to be rather an illogical method of designing, but it certainly produces an appearance of rock-like solidity in the erection. In the drawing of the Orders he rather over-emphasises the entasis of the columns.

Among things characteristic of the period in Vignola's publications is a careful drawing for setting out accurately the lines of a spiralised or twisted column—a thing which perhaps ought never to have been done, according to the dictates of pure taste, though Raphael adopted it in his cartoon of the lame man healed by the Apostles. It does not look out of



CAPRAROLA: A BALUSTER FROM
THE TERRACE.

place in the baldacchino of St. Peter's, but that sort of thing, of course, was after Bernini's own heart. Evidently Vignola thought, at all events, that if it were done it should be done with scientific accuracy. Such detail, however, hardly seems in keeping with the general severe style of his work. In his treatise on perspective there is a powerful drawing showing a whole section of arcades and balustrades, as if seen looking upwards, after the manner often adopted in Renaissance ceiling paintings. It is quite a wrong way to do a ceiling, of course, but it makes, in its place in the book, a good essay in perspective.

Vignola was appointed chief architect to Pope Julius III., for whom he built the well-known semicircular pavilion of the Villa Papa Giulio at Rome (illustrated in THE ARCHITECTS' AND BUILDERS' JOURNAL for April 19th, 1911). He is believed to have been a good deal associated with Michelangelo, and it has been suggested that some of Michelangelo's architecture has had the hand of Vignola in it. It is quite possible; as far as architecture is concerned they are kindred spirits.

Vignola died in 1573, and was honoured with a state funeral. He was certainly one of the finest and most gifted spirits among the architects of the Italy of the Renaissance.

CORRESPONDENCE.

"A Defence of Official Architects."

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—My attention has been directed to Mr. Dixon's defence of official architects in your issue for September 11th. Absence from London has prevented me from replying sooner thereto.

Mr. Dixon writes with moderation, and one is inclined to suppose he has some sympathy for the grievances of the private practitioner in the encroachments that are taking place. Personally, I do not consider an architect's remuneration should be made a subject of discussion as between the official architect and the private practitioner, in view of the professional recognition of a fixed schedule of charges, devised no doubt to prevent such competition.

Mr. Dixon seems to be impressed by the diplomas held by the London County Council assistants. Diplomas are the insignia of attainment to the reasonable knowledge considered necessary by professional bodies for practice; and if registration follows it will be an acknowledgment of the need of State protection of the public against incompetency; but professional or State qualifications are a poor substitute in the selection of an architect for the quality of the actual work.

Like many of us, Mr. Dixon is given furiously to think "of the itinerary of our art," but what must be the conclusions of the mere layman on the need of architects, and the methods of producing architecture, when first among the very buildings commended as "well above the average level of taste" come those that are ostensibly designed by engineers? And is it not a poor incentive to personal and spontaneous expression in art if officials claim all the credit of the work of the hundreds "of members, licentiates, and students of the Institute," who not only labour in nameless obscurity, but are under the disadvantage of being out of touch with the immediate needs of the projects to which they have to give the proper expression?

Surely the hundreds of thousands of pounds now being spent on official architects might be better expended in the open market, when many of these now obscure assistants could find the employment, the prestige, and the independence they deserve as private practitioners.

Traders, with the support of the public, have seen that contracts are let in the open market, and apparently bills-of-quantities are not prepared by officials. Will State, civic and departmental architecture flourish with less freedom?

HERBERT WIGGLESWORTH, F.R.I.B.A.

London, W.C.

Carden Hall.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—On page 341 of your issue of September 25th you published a view of the remains of Carden Hall, and gave an interesting account of the fire which recently took place there. Anyone reading the account and its allusion to sixteenth-century work would naturally suppose that it referred to the oak nogging shown in the photograph. There is some very interesting old oak on the other side of the Hall, but none of that seen in the view was in existence eight years ago. The nogging on the butterfly wings is extremely recent, and has no resemblance to ordinary Cheshire work. A very casual glance reveals the late eighteenth century peeping out. The fit of the oak to the sash window openings, the angle of the pediment and the bull's-eye would, indeed, be "remarkable" if made in the sixteenth century.

HASTWELL GRAYSON, F.R.I.B.A.

Liverpool.

THE STYLE FOR THE NEW DELHI.

TO the discussion on the style that shall be adopted for the buildings of the new Delhi two important contributions have been made during the past week, by Mr. Herbert Baker, F.R.I.B.A., and by Lord Curzon. Both are well fitted to express an opinion, Mr. Baker for the reason that he has already done so much in South Africa to show that fine results modelled on Classic lines are possible when the architect possesses sufficient ability to carry them out, while Lord Curzon's experience as Viceroy in India entitles him to speak with intimate authority.

Both contributions have appeared in the columns of "The Times," from which the following abstracts are taken:

Mr. Baker's Views.

The building of Delhi is a question of Imperial as well as of artistic importance; as an event in the history of architecture it may perhaps be compared to the building of Constantinople. The problem of Delhi, however, presents much greater difficulties due to the wide divergence of race and climate which separate East and West in the British Empire, and fusion may well seem as impossible in architecture as in race and national characteristics.

There are those who contend for the elimination of all conscious recognition of convention and tradition in architecture, and believe that the golden age of a new style may be brought about, not by the adaptation of traditional methods, but by following, as in engineering, the rational demands of materials and construction. But it is doubtful whether even those who might have faith in this theory in the abstract would venture on the experiment in India, where sentiment and tradition have such deep significance.

The most popular decision would probably lie in the choice of the best of the Indian styles as the basis of the design for the new city. Such a choice would, no doubt, strongly appeal to those who have felt the fascination of the ancient art of India, and to all who may have been shocked by the atrocities which have resulted from unsympathetic attempts to transplant the ideas of Victorian art to that country. Yet, if the architecture of Delhi is to bear its full significance to the present and future generations, it must be a crystallisation of all the chief elements that make up the India of to-day. The new capital is not merely the shrine of the glory of India, it is to be the living centre of the administration. First and foremost, therefore, the spirit of British sovereignty must be imprisoned in its stone and bronze.

Bearing this in view, we may turn to the architecture of our public buildings in England while the Empire was in the making, the Classic style of Jones and Wren and their followers in the eighteenth century. It may be asked, however, whether the employment of such a style rules out any of the nobler features of Indian architecture. The colonnade and arcade—two or three deep, if need be—the open court of audience, are common features in southern Classical architecture. The deep portal arch of Persia and India has its prototype in the Classical exedra common in the Roman bath and well known in the Vatican. The pride of Indian architecture, the dome, has its highest manifestation in St. Paul's. And the magnificent ground planning of the Taj Mahal is but an Eastern example of the "grand manner" of the West.

There should exist, therefore, in the style which has been advocated all the necessary elements ready to the hand of the architectural alchemist. But to the artist's creative power must be added sanity of judgment. He must avoid a Whitehall on the one hand and a Palace of Delights, which might come perilously near a "White City," on the other. There must be no conscious straining after invention or originality, to which sincerity in following the true and natural laws alone can give birth. There must be good building and a frank

acceptance of modern methods and materials. The controlling mind must heat and weld into his orderly conception all that India has to give him of subtlety and industry in craftsmanship. And, lastly, he must so fire the imaginations of the painters, sculptors, and craftsmen of the Empire that they may, interfusing their arts with his, together raise a permanent record of the "history, learning, and romance" of India.

Lord Curzon's Views.

No doubt the first inclination of any sympathetic student of the problem would be to erect Indian buildings in India, and to be satisfied with styles which, if not always indigenous in origin, had been suited to the conditions of the country and had given free play to the imaginative genius of its craftsmen. But a little reflection is sufficient to show that these considerations must defer to a more practical test.

The British Governor or Viceroy in India requires a house in which he can entertain on a vast scale, where hundreds, and sometimes thousands, of persons will congregate, where deputations will be received and Levees or Drawing Rooms held, where his European staff can live and carry on their duties, and where his family and guests can be housed, under the equivalent to European conditions. Similarly, if we turn to the public buildings, the officials and clerks, Indian as well as European, must do their work in commodious and airy surroundings, with easy access to large libraries and rooms of official storage; while Legislative Councils and Committees, certain to increase in dignity and importance, must meet in spacious and well-ventilated halls, with accommodation for the public and the Press. These are an inevitable feature and consequence of the European system which we have introduced into India. It is a non-Indian, a foreign, and a Western system. Can it be satisfied by Indian or Asiatic architectural forms?

No Indian Monarch or Mogul Viceroy lived or worked in circumstances at all similar. His women were shut up, almost barricaded off, in a separate building; his receptions were held in halls open to the air and were attended only by men; his private quarters were small and almost unfurnished; windows and glass as we use them were unknown; the work of his public offices was often performed out of doors or in stray corners, with little method, comfort, or order; he had no Council or Parliament other than a public Durbar. His palace in all probability required to be surrounded for safety's sake by great battlemented walls, and resembled a fortress.

What, then, are the styles that are open to a European builder of great public edifices, or even of superior dwelling-houses, in India at the present day? He will find no clue in Hindu architecture, public or domestic, nor would any Hindu nobleman or Rajah build himself a palace in that style.

We are thus driven by a process of exhaustion to the consideration of a foreign and Western model, and of these some form of the Classical style seems well nigh inevitable. The form of this style which has been most widely adopted by the English in India and of which the best extant examples are to be found at Calcutta and Madras, is that which was simultaneously planted by English colonists in America and the East. It may be described as a colonial adaptation of the Palladian style. Government House at Calcutta was constructed, in 1798-1802, upon the ground-plan and to some extent on the model of my own home in Derbyshire, which was the handiwork of James Paine and Robert Adam; and, in spite of certain obvious inconveniences it has served its purpose well as a great house of official residence and public entertainment for a century.

The same style in less pretentious forms was adopted by the merchant princes and magnates of Calcutta, and procured for it the somewhat ambitious title of the City of Palaces.

WHO INVENTED THE COLUMN?

THE question, Who invented the column, if not definitely answerable, raises many interesting points.

It seems almost to be taken for granted, says Mr. L. March Phillipps, in a luminous discussion of "The Origin of Structural Forms," in the current issue of *The Architectural Review*, that, because Egyptian civilisation happens to be the oldest on record, it must have been the originator or inventor of the forms used here. Thus, a bunch of papyrus stems of an Egyptian shaft becomes the original idea of the shaft in architecture, the lotus-bud the original idea of the capital, and so on. But it is very doubtful whether Egyptian architecture deserves all this honour. That it gave to the structural forms it used characteristics of its own, derived from Nile scenery and associations, is certain; but that is not to originate structural forms.

The truth is that there is a kind of use of material which is inherent in material itself, which requires no inventing whatever, if by invention we signify any intellectual, rational exertion of the human faculties. It is impossible to manipulate and use in any way the matter of which earth is formed without throwing off such "inventions" at every step. Birds and animals are just as inventive in this respect as man. We cannot verify the conjecture, because the early history of our race is so obscure, but, in all probability, the originator of features like the column and the wall was the missing Link!

But there is another sense in which the origin of forms becomes an intelligible phrase, and that is when the dimensions and shape of such forms are consciously designed to suit the structural purpose they fulfil. For instance, the purpose of a column is to afford support. This support, however, can be offered in various rough-and-ready ways. Fragments of rock plunged point upwards into the peat of many an English moorland will uphold the altar-slabs of doubtful deities. If it is sufficient that a stone supports another for it to be called a column, then these fragments enter the competition for the origin of columns, a competition which, has been pointed out, has no solution this side of the origin of man. But if we shift the test and say that a column to be a column must be the shape of a column, then we escape the danger of being led into that hopeless quest, for it is obvious that these fragments under such a qualification cannot claim to be columns at all. They afford support, but they are not the shape of the support they afford. Their base, which should be the strongest part of them, is usually more or less attenuated for convenience in driving into the ground, and is, therefore, their weakest part; indeed, no attempt has been made to give them the form of the function they fulfil, nor is there the least inkling perceptible that this could be a desirable thing to do. They are the merest shapeless fragments, used for a certain purpose, certainly, but in no way expressing that purpose in their form.

It will be seen that the distinction here drawn, and in which the writer desires to lay stress, is concerned with the word "form." It is in the form of the thing at man's relation to it is indicated. It is its form that matters. If you ask who invented columns, meaning the first supported one thing by another, the only rational answer is that Nature invented them. But if you ask who invented the form of the column, meaning who first conceived the idea of shaping the column appropriately, as the embodiment of its function, then you raise a question in which man is interested. You are, in fact, considering the point at issue not relatively to Nature, but relatively to man. For the function of the thing was Nature's contribution, and was there from the first; but the clothing of the function in perfect and appropriate form is man's contribution, and belongs to his history.

Let us, therefore, use the latter formula, since it alone has any meaning, and let us ask who discovered the form of the column? Let the reader consider the familiar illustration of an Egyptian column. The form that is most common in that country prevails among the Nile temples for several thousands of years. Its shape speaks for itself. Its chief peculiarity, that which most inevitably catches the eye, is the contraction of the base. A pointed base breaks the first law of column formation. That the Egyptian architects persistently and systematically violated this law, without having the excuse of the dolmen-builders that the contraction was useful for driving into the ground, is an indication of what is made sure by a little further examination, namely, that the notion of form expressing function had never so much as occurred to them. For it seems quite impossible that a people who had, however vaguely and imperfectly, grasped the idea of the unity of the two, who had ever thought of the evolution of form under the guidance and control of function, and of the kind of beauty flowing from fitness which such forms would possess—it seems impossible that such a people could ever, by undermining the column's strength in the Egyptian manner, have so wantonly extinguished its hope of expressing its vigour and power.

It is a fact, says Mr. March Phillipps, as solid as stone can make it, that the pinched-in bases of these columns render a certain proportion of their bulk superfluous, since only so much of the column as rests on earth can really be acting as support. It is a fact, not an artistic but an engineering fact, that a good deal of the matter of an Egyptian column is composed of is totally irrelevant to its function, and only serves to conceal it. It is a fact that an engineer, if we asked him to make the column like what it was doing, would at once start hacking off the masses of superfluous substance which conceal its real self. In short, it is a fact that the Egyptian column is not, and was never intended to be, a realisation of the column's true form at all.

Examining the column as realised by the Greeks, the author continues: The function of a column is to support, and that function the Egyptian column entirely fails to embody. But can he imagine a more perfect embodiment of it than is offered by the Doric column? Is there, in that vigorous, clean-cut shaft of stone, an ounce of matter that is redundant, that is not devoted to the column's duty and purpose, that does not go to the embodiment of function? Here we have man co-operating with Nature, man carrying out and bringing to perfection an idea which Nature was charged with, yet could not deliver herself of. For weight and support are forces which operate in all natural undertakings. They hold the earth's crust together. They guide the growth of every plant and tree. The rocks of our cliffs and coasts in their rough jumble are obeying those laws. But Nature of herself cannot express these laws as intellectual ideas freed from all accident and irrelevancies. She cannot give form to her idea. It seems she must look to man to do that for her. She looks to the Egyptian, and he responds by building an arrangement shaped exactly like a fat sausage and surmounted by a capital in the likeness of a monstrous bud, a capital which, far from adapting support to weight by judicious expansion, is more contracted at the summit than the base. Imagine poor Nature's sigh of disappointment over her baffled expectations in that quarter. Then she looks to the Greek, and he responds by giving her the image of her thought. Himself intellectual, he is able to sympathise with thought, with an idea. It is not enough for him that his column can support. It must express that purpose. It must not only act like a column, it must be a column. This is what the Greek column achieves. It comes as a consummation. Such architecture is like the greatest of poetry, in that it seems to give outward form and expression to thoughts else inarticulate.

Of entasis the author remarks that he knows of no

more delicate concession than this from science to art. Something, just a shade, of scientific truth is deliberately sacrificed in order that the scientific truth may be made apparent and accessible to man. The final form of support was not, after all, to be the form which actually gave most support, but the form which communicated the idea of support most eloquently. The two were almost identical, but not quite. The difference between science and art lay between them, a difference in which art had the last word. Fluting is another device directed to the same end; that is to say, its business is not with actual form, but with the appearance of form. It does not add vigour, but it adds the look of vigour.

It is therefore the Greeks who were the inventors of the perfected column. If the Egyptian motive had prevailed we should be further from the desired end than ever. We should not to this day know what structural form meant.

THE JOHANNESBURG ART GALLERY.

AS the Centre Plate to this issue we reproduce two perspective views of the new Johannesburg Art Gallery, designed by Mr. Edwin L. Lutyens, F.R.I.B.A. These drawings were exhibited at the Royal Academy this year. The building, which is to be erected on a site in Joubert Park, has a frontage of about 200 ft. and a depth of 120 ft. The east and west sides, which are shown by the lower illustration on the Centre Plate (incorrectly described thereon, it should be pointed out, as the view of the rear front) are of similar design, consisting of an open court, with a loggia at the back and pavilions on either side. These pavilions have been provided for the exhibition of works of a small type. The courts will be paved and furnished with statuary. On both sides of the building there are to be gardens, with large, regular expanses of ornamental water. The main front of the building faces the railway line, over which Mr. Lutyens has suggested the construction of a broad bridge in

alignment with the portico of the Art Gallery, linking up Joubert Park with the Union ground. At present it is proposed to erect only five rooms and the portico but as this accommodation will be quite inadequate for the housing of the collection possessed by Johannesburg, it is probable that the building will be wholly completed at an early date. The interior arrangement of the building may be studied from the plan reproduced on this page.

R.I.B.A. PROBLEMS IN DESIGN.

AS announced in our issue for last week, we propose to publish at regular intervals a selection of designs which have been submitted in the new scheme of testimonies of study for the Final Examination of the Royal Institute of British Architects, and which have received the approval of the Examiners. As a commencement we are giving some designs by students at the Liverpool School of Architecture, but in later issues we shall illustrate designs by students at other schools and by individuals working privately.

In last week's issue designs submitted in Subject I (a) and (b) were reproduced. In the present issue the illustrations show designs in Subject II. (a) and (b) and in Subject III. (b). The full particulars of the subjects are as follows:

Subject II.

(a) A large monument to an explorer, to be placed against the wall of a public building. (Shaded drawings to $\frac{1}{2}$ in. scale.)

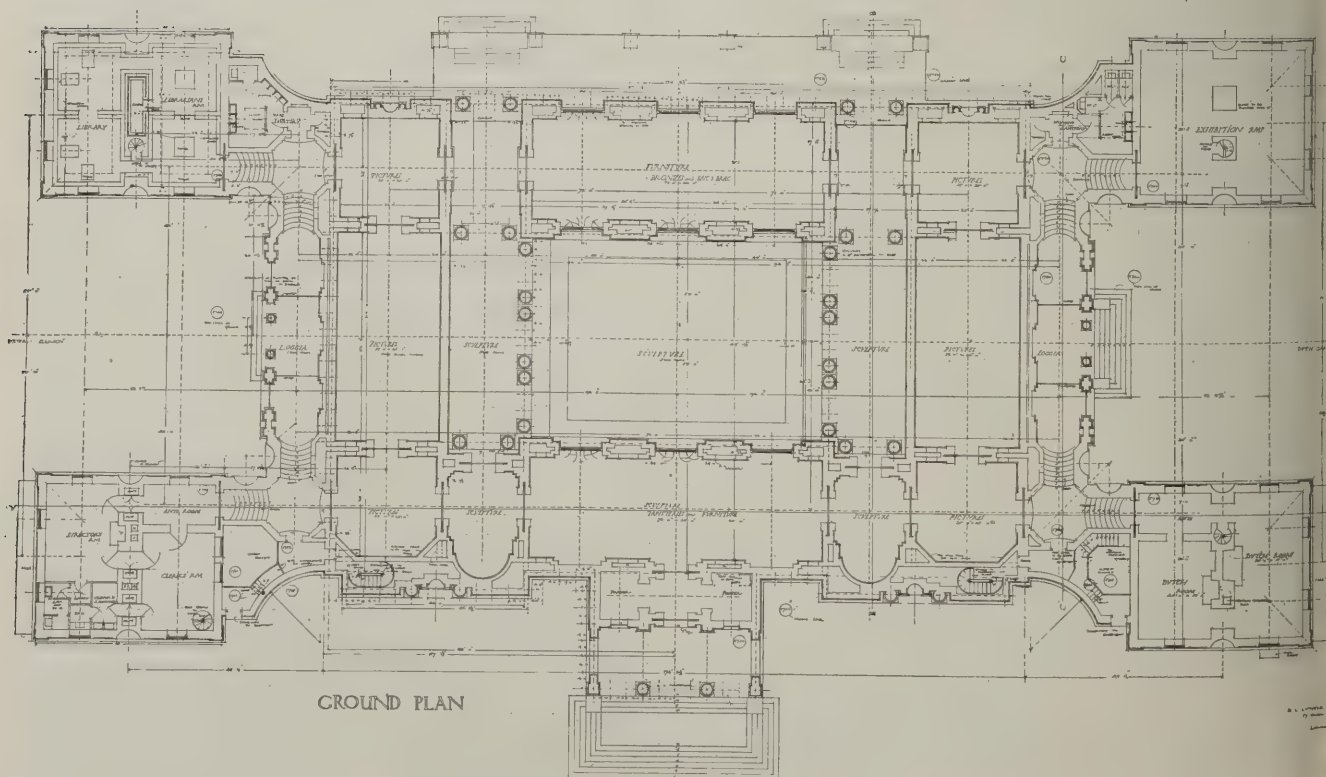
(b) A cloister with external entrance gateway or tower to a collegiate building around a courtyard 100 ft. square. (Drawings required to $\frac{1}{8}$ in. scale, with $\frac{1}{2}$ in. details of the complete construction of one bay.)

Subject III.

(a) A detached ballroom to a large country house, to be connected with the house by a covered way.

(b) A landing-stage to a river or lake, with a restaurant. (Drawings to show complete construction to $\frac{1}{8}$ in. and $\frac{1}{2}$ in. scales.)

JOHANNESBURG ART GALLERY



THE NEW ART GALLERY, JOHANNESBURG: GROUND FLOOR PLAN.

EDWIN L. LUTYENS, F.R.I.B.A., ARCHITECT.

HERE AND THERE.

WITH the formal opening of the Wesleyan Hall there has been the exhilarating spectacle of the general public centering its interest on a modern building. Throngs have been going about the structure admiringly, and the newspapers have devoted so much space to the design that the architectural world has become quite embarrassed at the distraction. In particular, and to the profession's great astonishment, the newspapers have not forgotten to include the names of the architects at the same time as the total number of bricks laid and tons of cement consumed. For all this attention we must be very thankful, and if there have been slips of the journalist's pen, we must attribute them to the rush of life in Fleet Street. To the "Daily Chronicle," for example, for having given a perspective view, and for having devoted a column to a description of the building, architects as a body are under a debt of gratitude, and there should be a pervading spirit that rises superior to any notice of the small error in the architects' names, Messrs. Lonchester and Richards," while gratitude for benefits received will sternly repress any tendency to smile when reading that "the main staircase is said to be the finest example of its style—the French or optical." No doubt this feature will receive its meed of admiration, but it is the sculpture and leadwork on the exterior that will make the greatest appeal to the eye of the man in the street, and in the fulness of time, no doubt, the public will give the building its own name, as they did the new Gaiety Theatre, which, because it (very rightly) displayed few windows on its face, became henceforth known as "Edwardes's Theatre." Already there appears to be some dissatisfaction at the name of the building that has arisen on the old Aquarium site. Its official title is the Wesleyan Methodist Central Hall and Connexional Church Buildings, but, imposing though that may look at the end of letter-paper, it is obviously too much for general consumption. "The Wesleyan Hall" would seem to be the best contraction, but it has been styled "the Wesleyan Cathedral." That title, however, is already given to the chapel in the City Road which was built originally by the great revivalist about the middle of the eighteenth century, the pastor of which chapel is often referred to as the "Dean in Residence." But if the finest modern building in London is to be called the "Wesleyan Cathedral," while Westminster Abbey stands facing it, and Westminster Cathedral is added by, what confusion will not arise? Buildings, names, and architects' names will all become mixed, and we shall hear visitors telling one another of the strangeness of Wren's brick campanile, the "barbaric ornamentation" of Bentley, and the charm of Messrs. Lonchester and Rickards's north front to the Abbey. The problem of giving a comprehensive title to the building which the last-named architects have designed lies in the diversity of use to which it is put. Primarily, of course, there is the large hall, which is in the same sense also a Nonconformist church, and there are, in addition, the smaller halls, the connexional offices, the immense tea-room, and the library; but—shade of John Wesley—the whole of one corner is occupied by the City and Midland Bank. The bank authorities were in occupation many months ago, and soon afterwards their title not only appeared on the customary brass-plate, bearing the customary block letters, on the other side of the doorway, but also on the shields above, with their finely-carved enrichments—intended, properly, to receive the names of illustrious Methodists. As things stand, however, the gilt letters of the bank glare out on the main façade, and if their appropriateness were to be defended, rather than condemned, the proper title for the building would seem to be "The City and Midland Bank and Wesleyan Hall."

To discover the real author of a phrase is generally difficult. Our most familiar attributions are often wrong. Napoleon, for instance, was not making an original observation when he called us a nation of shopkeepers; as a fact, he had never been to England, and in so crystallising our characteristics he was quoting Paoli—"Sono mercanti, as Paoli used to say." I am reminded of this by being confronted with the latest addition to our vocabulary—the verb "to town-plan." Was Mr. John Burns the author? Probably we shall never know. But the word is with us, at all events, and will establish its place by the excellence of its definition. In no way so incisive could one say that "an area was being town-planned by the local authority." And as architects are primarily concerned in this matter they will no doubt take note of the innovation. Many other words are of recent introduction. With the extended use of reinforced concrete several additions, or words with fresh meanings, have passed into currency. Everyone understands now what "forms" and "shuttering" mean as applied to concrete work, but they are both of quite recent acceptance—from America. And if "town-plan" is being taken as a verb, we may expect proper nouns to be similarly adapted. Are there not instances already? To Pasteurize a fluid, to Burnetize wood, to macadamize a road (the capital M having been dropped long since)—if these are accepted, why not others? The prospect is a formidable one. It might, indeed, lead us to speak of Doultonizing a bathroom, Kahnizing a beam, and Benhamizing a hot-water supply. What an ordeal a visit to the Building Trades Exhibition would then be. We should certainly require a special glossary for the interpretation of the catalogue.

* * * * *

The impending completer submersion of the Philæ temples has raised a side issue which is being discussed with much breeziness. Sir Henry Knollys is the prime-mover. It was he who first put forward the supposition that in a burning garret there were the Dresden Madonna on the wall and a live baby on the floor; and having assumed, further, that only one of the two could be saved, he declared unhesitatingly for the baby. Then came Sir George Birdwood who expressed himself for the Dresden Madonna. That brought forth a chorus of assailants, whom Sir George sought to avoid by throwing on to other shoulders the penalties of his utterance. The question has its point, of course, in regard to Philæ's temples, which were either to be preserved at the expense of the poverty-stricken Egyptian people around, or to be partially submerged by the flood of water that would enrich the land. In truth, it is the old question of art for art's sake or art for life's sake, in regard to which I frankly proclaim myself on the side of the latter. There are many reasons to support this view when the everyday affairs of humanity are concerned. Waterloo Bridge is, to me, a constant joy; yet anyone who has to pass over Rennie's structure will know that it is very deficient in width, and on a dirty night the traveller will find little consolation in the fact that, though supported on some beautiful arches, and hemmed in by a granite balustrade of excellent proportions, he is, nevertheless, jostled and besmirched on account of the narrowness of footway and roadway; whereas Westminster Bridge, poor engineer's Gothic that it is, has such a broad back that he can pass over with comfort. The ideal is to secure the width of Westminster with the beauty of Waterloo—an ideal quite possible of realisation; but if, as in the case of the Dresden Madonna and the live baby in the burning garret, there must be a choice of evils, I am Philistine enough to choose the bridge which satisfies the practical needs while grossly offending my æsthetic sense.

UBIQUE.

THE SUBMERSION OF PHILÆ.

IN connection with the illustrated article which appeared under the above heading in our issue for last week, it is interesting to quote from two letters that have appeared in "The Times":

Colonel Henry Knollys says that careful, unwearied, and competent investigation has established the fact that nowhere south of Shellal would it be practically possible to construct a dam, like that at Philæ, which would similarly effect an overflow of waters and cause a vast area of desert miles to blossom like the rose. "Shall we sorrowfully make up our minds to the regretful sight of the peeling away of the interesting decorative painting coeval with a comparatively late period in Egyptian history? Or shall we choose the contemplation of multi-millions of men, women, and children writhing under a starvation the full horror of which is so piteously illustrated in Eastern lands? The attempted parallel of the contingent destruction of the Parthenon with the washing away of the frescoes in the Temple of Isis is only defective in so far that it totally fails to bring the two 'on all fours.' Your correspondent on 'Philæ and the Philistines' could not by the wildest fancy evolve a scheme whereby knocking down the Parthenon would feed the whole of the Greek nation. As for Alexander's sarcophagus at Constantinople, the cold neutrality of an impartial judge would unhesitatingly put out of court a meticulous comparison between a few cubic feet of beautifully carved marble and the noble Titanic achievement of the Assuan dam. Would not the following figment provide a more pertinent, if more prosaic, simile? Suppose an art lover in a garret with a baby and the Dresden Madonna. Suppose a sudden outbreak of fire were so to block up the narrow staircase that he could not rescue both objects. Ought he to save the baby or the picture? Should we spare Philæ or starve millions?"

Mr. Robert Ross protests against the oft-repeated suggestion that because the ruins of Philæ belong to "a comparatively late period" they are less worthy of preservation. "This attitude towards history and art has involved more ruthless destruction than any Nile dam. It appears to me paltry and unscientific. From an historical point of view a relic of Waterloo belonging to 'a comparatively late period of English history' is surely just as interesting as a relic of Agincourt, and to our descendants may seem of greater importance. . . . On the artistic side I need only refer to the terrible destruction of Late Gothic architecture and the magnificent Renaissance decoration in churches during the Gothic revival of the last century, when only 'Early English' was esteemed, and the same wanton excuse 'that such things were comparatively late' was always urged. Ephemeral æsthetics are as dangerous as ephemeral ethics. A scheme, moreover, for knocking down the Parthenon in order to feed the Greek nation is not so fantastic as Colonel Knollys would have us believe. An enterprising and philanthropic syndicate might easily negotiate the ruins, the removal of which to America, by engineering feats similar to those used in the admired Nile dam, is not at all beyond the bounds of possibility. There are plenty of millionaires who would pay a price sufficient to feed the Greek nation, not a luxurious race, on their native soil in comparatively late periods of their history. Think of the satisfaction to the shareholders, who would make Greece 'blossom like a rose' and at the same time pay 20 per cent. to the underwriters and debenture-holders. What would a few columns of marble be to so noble and so Titanic an achievement which combined philanthropy with prudence? In regard to the pertinent parallel (if it be a true parallel to Philæ and the Nile dam) of the burning garret, the baby, and the Dresden Sixtine Madonna, let me say at once that I would rescue Raphael's picture first. I might argue that the sale of the rescued picture would

build a small Nile dam, or at least save hundreds of other babies from starvation. But I will not; I will merely ask a question of my own. Had America the right to sacrifice so many human lives in the construction of the Panama Canal in order to save millions of money?"

LONDON IN THE 'FIFTIES.

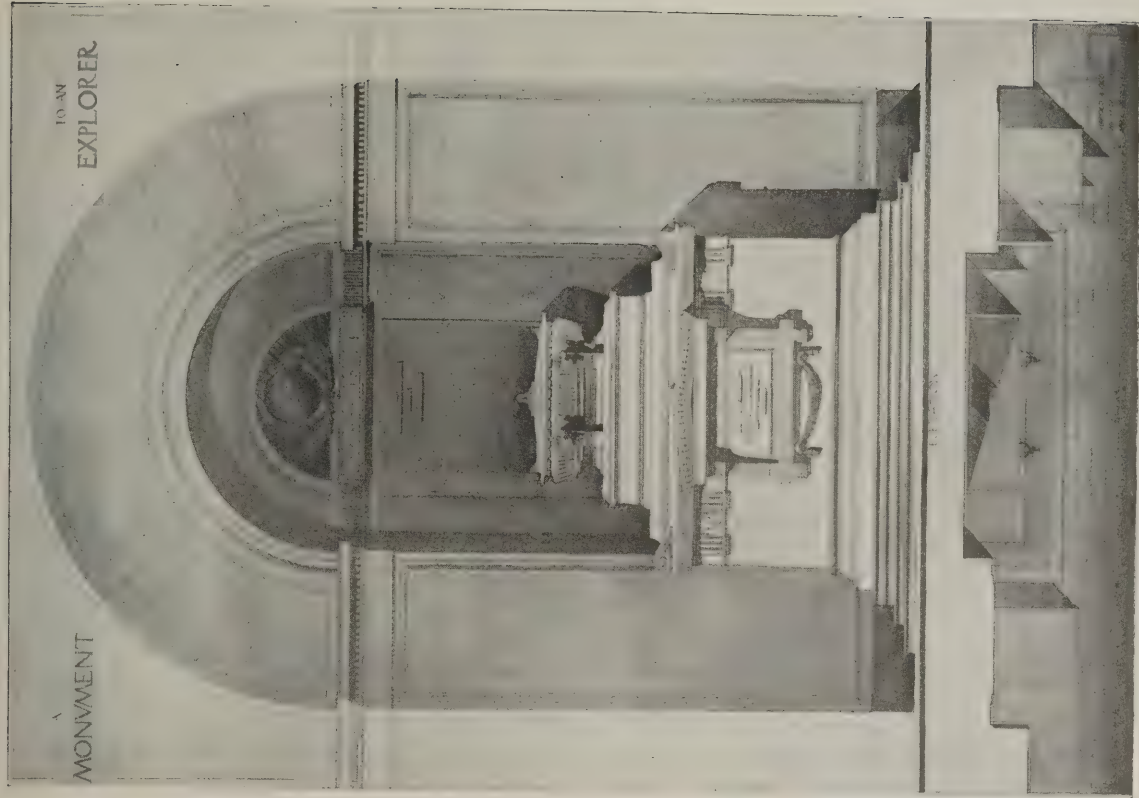
LONDON is so constantly changing its aspect that views taken only within comparatively recent times appear astonishingly strange and unfamiliar. A striking example of this fact is afforded by an article in the "Morning Post," where Mr. Herbert Beresford Chancellor describes some of the changes that have taken place in the centre of London within the past seventy years. Piccadilly then differed considerably from its present aspect. At that time there still remained the Ranger's Lodge opposite Dow Street, from the gate-posts of which were removed the stags which now flank Albert Gate. There was no St. James's Hall (demolished some years ago and now replaced by the Piccadilly Hotel), the Circus was not yet, and the advent of Shaftesbury Avenue, opened in 1886, together with Charing Cross Road, just a year younger, did away with a number of squalid streets and courts, of which Seven Dials was the centre.

In Charing Cross and Whitehall the changes are no less marked. Northumberland House was in existence till 1873, when it was pulled down to make way for Northumberland Avenue. Trafalgar Square had only just been formed, and the Nelson Monument was yet to come in 1849, the Landseer lions not being added for another twenty years.

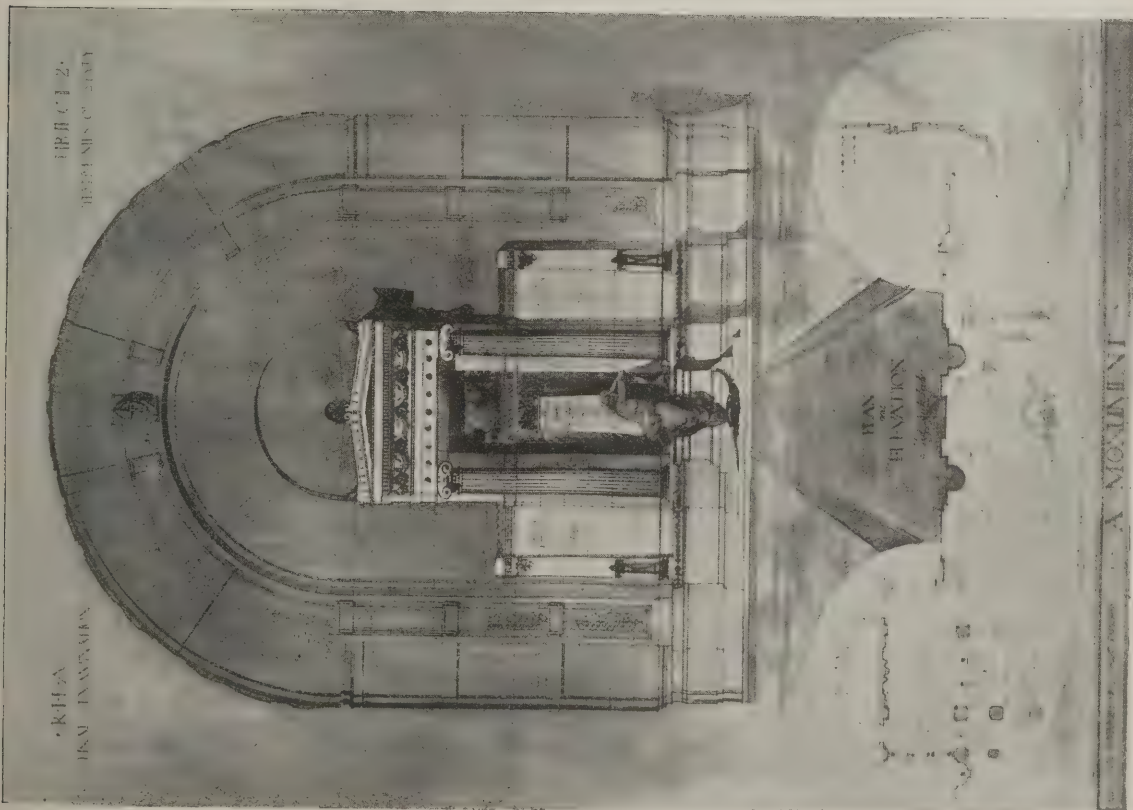
It would be impossible to particularise the fine private houses in Whitehall which have disappeared since 1842; the last of them to go (for Gwydyr House remains and others have been adapted to official uses) was Carrington House, built by Chambers, which was demolished to make way for the War Office. But many mansions have disappeared, one at least has come into existence, the rebuilt Montagu House, which arose in 1859-62, the most easterly private residence of any importance remaining in the occupation of its owners.

The changes in the Strand and Fleet Street have been innumerable. The Lowther Arcade has gone and Coutts's bank reigns in its stead. Gone is old Hungerford Market, which remained till 1863, when it was replaced by Charing Cross Railway Station, whose advent provided the only means of crossing the river, except by boat, between Waterloo and Westminster Bridges. The transformation which has been wrought by the gradual improvements in building, the erection of hotels like the Savoy and the Cecil, and by the gradual widening of the thoroughfare, has largely changed the aspect of the Strand, but it has been the obliteration of such landmarks as Holywell Street and Wych Street, and Temple Bar (taken down in 1878, when the Griffin replaced it), that has done most to make this thoroughfare almost unrecognisable to those who knew it during its earlier and more picturesque, but less convenient, days. The building of the Law Courts was one of the most notable of the changes which have taken place in the Strand, and with its advent in 1880 old Clement's Inn was demolished.

Farther east no less drastic changes have taken place. Newgate Prison, the work of the young John Dance, has given place to the Central Criminal Court, and Christ's Hospital has been demolished. In 1841 the old Fleet Prison, in Farringdon Street, was still in existence, but Ludgate Circus was not formed till 1864-75. The precipitous Snow Hill and what was called Holborn Hill were yet the difficult approaches to Holborn from the east, the Viaduct not coming into being till 1869; while Queen Victoria Street was not opened till 1871.

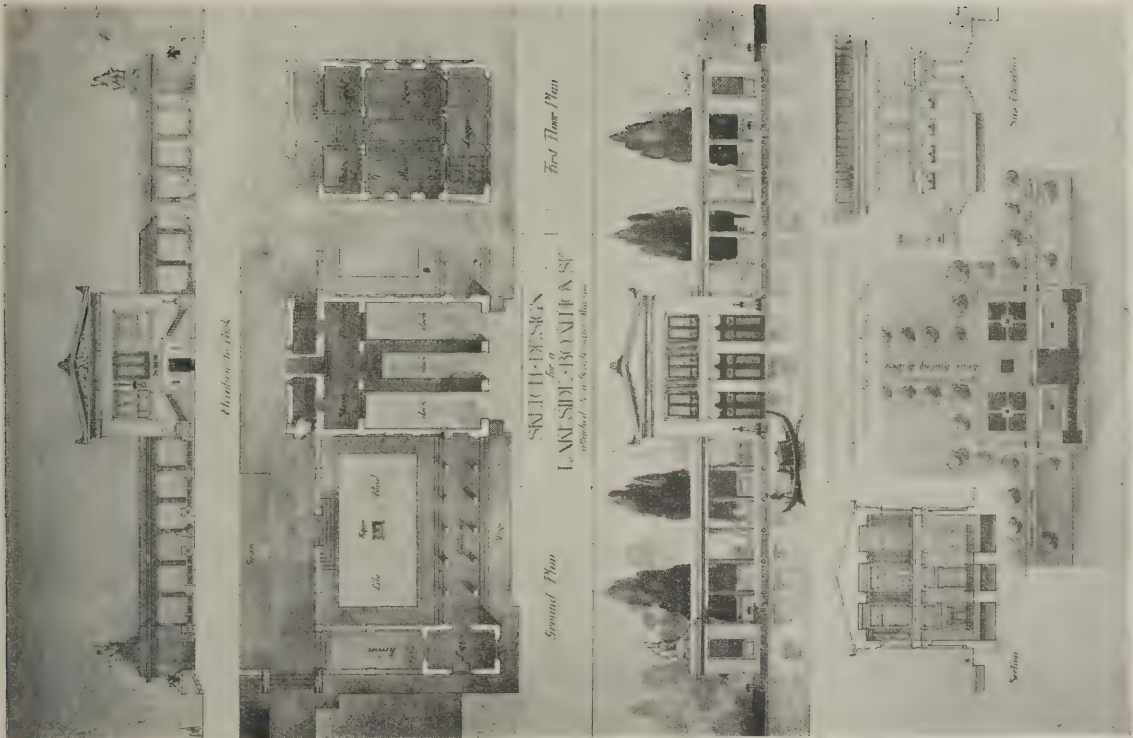


By H. A. Dod (Liverpool School of Architecture.)



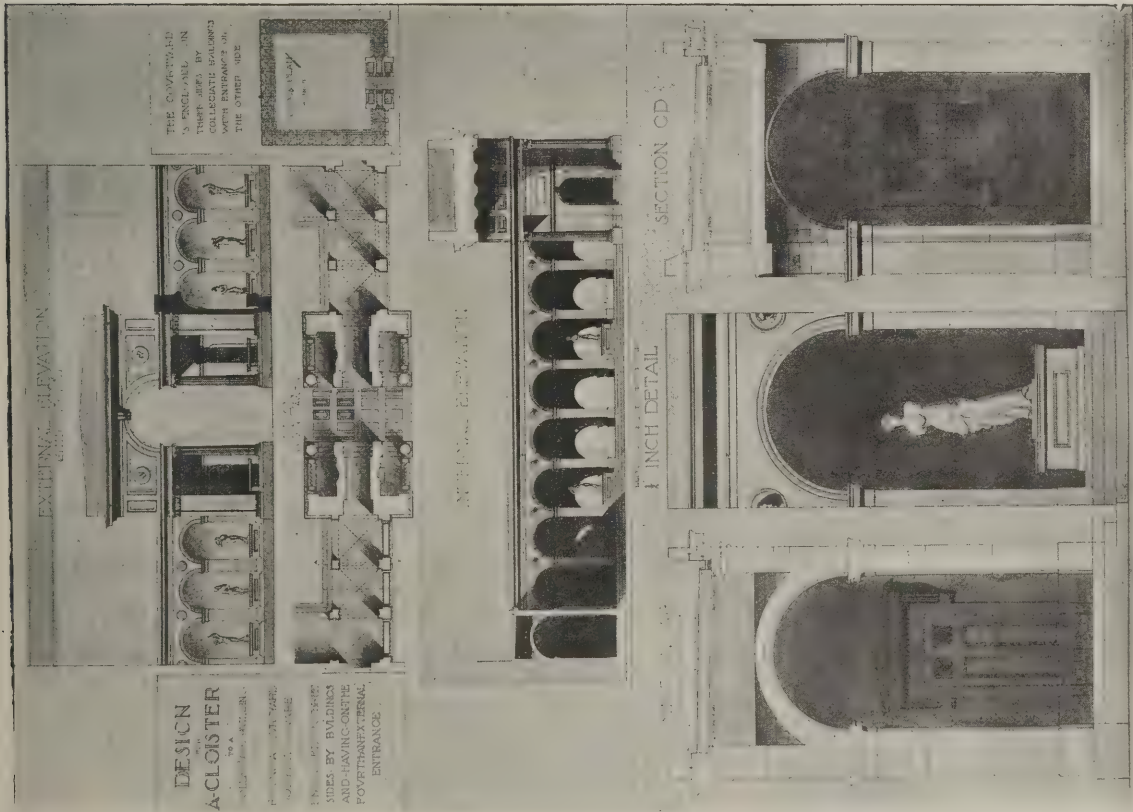
By H. C. Bradshaw (Liverpool School of Architecture.)

TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION: APPROVED DESIGNS, SUBJECT II. (a).



By W. H. Thompson (Liverpool School of Architecture).

TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION : APPROVED DESIGNS, SUBJECTS II. (a) AND III. (b).



By R. S. Dixon (Liverpool School of Architecture).

CONCRETE AND STEEL SECTION.

(MONTHLY.)

Concerning the formulae employed in the calculations for reinforced concrete design, specialists seem disposed to range themselves in opposition camps. There are those who put too much faith in formulae, and those who put too little. This opposition was intensified by the very stimulating paper which Mr. Maurice Behar read before the Concrete Institute in the spring of the present year, on "The True Bending Moment of Beams with Various Degrees of Fixity." The author, in expressing the hope that the authorities are at present rafting the new regulations "will simply stipulate the application of the usual laws of mechanics for the determination of the dimensions of beams in reinforced concrete," seemed to deprecate the prescription of formulae. But, as Mr. Fiander Atchells said in his very able reply, if principles only were given, very few architects, surveyors, magistrates, or builders would be able to determine whether the regulations had been complied with. The regulations are given in words or in formulae, whichever are the more convenient; formulae representing "the engineer's shorthand, or a symbolic method of exhibiting the truth. Formulae are epigrammatic methods of stating the laws of science. If merely principles were laid down, we should require to be Rankines, Hapeyrsons, and Eulers as well, to convert the basic principles into a form that would be suited for the practical work of design." Certainly regulations should be sufficiently definite to prevent misinterpretation, for though definite dogmatic requirements are the unavoidable fault of occasionally overbidding by their letter what is obviously permissible to their spirit and intention, yet, on the other hand, any tendency to vagueness and uncertainty is always utterly confusing. Regulations without clear definitions would be worse than useless, and would virtually leave every man to be a law unto himself.

Regulations, nevertheless, do not necessarily represent finality, but are subject to review and revision in the light of experience and of further ascertainment, and there is always the possibility of formulae and similar data, when embodied in text-books or embalmed in official regulations, becoming, in course of time, hopelessly out of date. Otherwise it would have been necessary to appoint the Joint Committee which was formed last year for the revision of the existing regulations for reinforced concrete construction. The conference called together for the discussion of the matter comprised representatives of the R.I.B.A., the Institute of Builders, the London Master Builders' Association, the Concrete Institute, the Surveyors' Institution, and the District Surveyors' Association, and these gentlemen arrived at an agreement that it would be best to continue the methods of calculation given in the R.I.B.A. report, and not to introduce formulae into regulations, which would tend to stereotype these particular formulae and hinder the development of new modes of construction. A reasonable view of the matter seems to be that in drafting official regulations

formulae should be admitted on their merits, but should not be allowed to become stereotyped or sterile. That is the course that has been actually taken in preparing the L.C.C. draft regulations. In dealing with bending moments, we get nearly a dozen values of Wl (sections 24 to 29c; see ARCHITECTS' AND BUILDERS' JOURNAL of December 13, 1911); while further formulae are included in section 65, under the heading notation, and they are plentiful in Part III., which appears in the journal of December 27, 1912. Critics have grown sarcastic about them, and have commented that regulations should not be specifications. A few formulae also appear in the New York regulations, which were printed in our issue of February 28, and in both the English and the American regulations the omission of the formulae would not make for marked improvement, but would probably have the contrary effect. Granted that some of them seem to be superfluous, it would require a comprehensive intellect to say that they are so in all conceivable circumstances. What is more to the point is that, as we have already said, such data should be brought up for periodical revision—not fitfully and spasmodically, nor belatedly in response to clamour, but systematically and at stated intervals. Perhaps it is not yet too late to suggest that the New York regulations offer an excellent example of clearness and brevity. They consist of but forty-one paragraphs, which are in nearly every instance short and pithy, whereas the L.C.C. draft runs to rather inordinate length.

With respect to the question of notation, it has always seemed to us that the hopes for the general adoption in all countries of a single system were too sanguine. Complete Unification never seemed quite possible, and, indeed, it was rather surprising to find that the excellent scheme drawn up by the Concrete Institute found so much acceptance in America. It now appears that the Reinforced Concrete Committee of the International Association for Testing Materials have adopted a uniform notation for non-British countries, and have invited the English-speaking countries to revise the English draft in order to bring it into close accord with the foreign scheme. If this is to be done at the expense of the admirable clearness and simplicity of the Concrete Institute notation, the labour is likely to be vain. The English scheme has been already widely adopted, and while it may be capable of betterment, this will be more difficult to effect than worsening. It is not likely to be improved by tinkering. Uniformity with the foreign scheme is not to be despised, but may be easily bought too dear; more desirable, but still not indispensable, is a scheme common to the English-speaking peoples, and this one would be glad to see established. International agreement on any subject, however, is always difficult, and wars have arisen over documents of far less practical importance.

The Departmental Committee on Buildings for Small Holdings have visited Wayford, Norfolk, with the object of inspecting the concrete-block cottages and build-

ings that have been built there; the Committee having been appointed "(1) To inquire and report as to the nature and character of the buildings which should be provided for use in connection with small agricultural holdings in England and Wales, regard being had (a) to the convenience and requirements of the occupiers, (b) to consideration of economy, and also to the possibility of the reduction of cost by the use of materials and methods of construction different from those ordinarily employed at present. . . . (2) To submit a series of plans and specifications likely to be of assistance to local authorities and landowners for the purpose." The Commissioners were shown the concrete blocks in the making, and were informed that a six-roomed concrete-block bungalow which they inspected had cost £187 to build. From this showing it may be inferred that building with concrete blocks can be done considerably cheaper than building with bricks, although, with respect to small houses, the contrary has often been held. This is a point, however, on which definite data will doubtless be supplied in the Committee's report. Concrete is used for every possible form of construction in the Wayford cottages: the baths, sinks, food-lockers, and "coppers" are made of it, and it is reported that the Committee were favourably impressed with these uses of a material that seems to possess unlimited scope and adaptability.

If it should ultimately be found that building with concrete blocks provides a satisfactory solution of the housing problem so far as mere expense is concerned, there would probably soon ensue more attention than has been hitherto given to the æsthetic side of the question. The blocks, of course, need not be perfectly plain; but, on the other hand, it is of doubtful advantage to have them turned out of the moulds in a series of stereotyped surface-patterns. There would be monotony in their variety, and it would be better not to attempt ornamentation. Again, there is some danger of the blocks being made too large, for the obvious reason that the fewer of them that are required to be laid, the cheaper will be the labour in building. But a little house built of big blocks looks more insignificant than it need. It is so dwarfed as to seem out of scale with its elements. This effect is particularly observable, for example, in the small villas in the suburbs of Edinburgh. These, of course, are built of stone, but the difference of material does not affect the question. The point in each case is the same—namely, that the large blocks which dignify a large building dwarf a small one. In each case the difficulty is identical: You can neither cut nor cast blocks to smaller size, nor lay them in position, without incurring the cost of extra labour, and so, in the case of concrete-block cottages, stultifying the object in view in using them at all. On the whole, one is disposed to feel rather jealous for the reputation of concrete than anxious to apply it to the mere cheapening of first cost. It has more estimable virtues.

Size and Surface of Blocks.

International Notation.

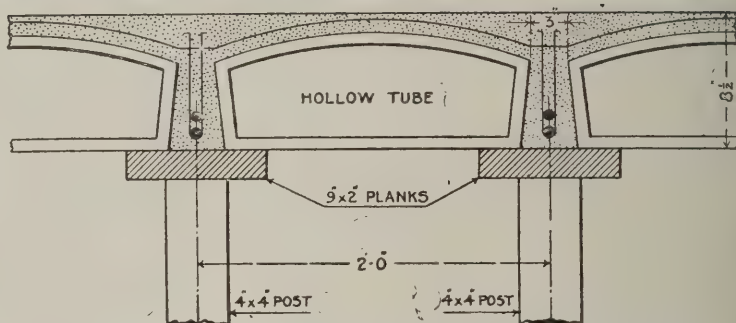
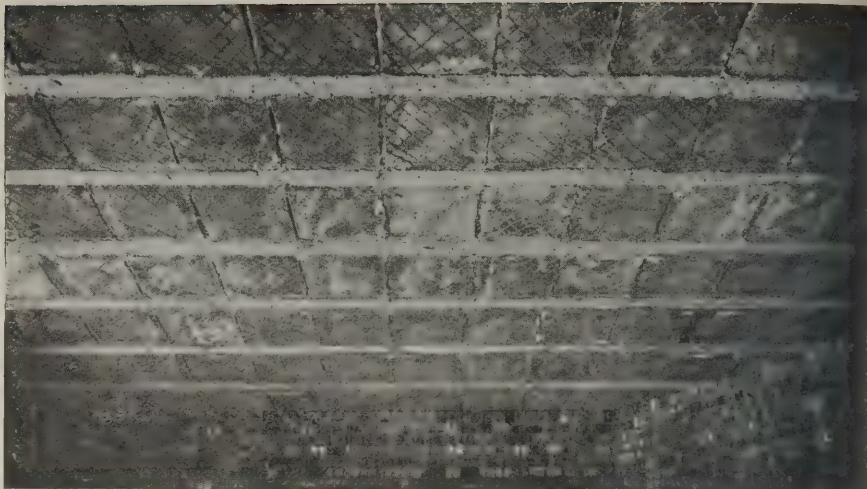
Block Concrete Cottages.

REINFORCED CONCRETE WORK AT THE NEW KING'S COLLEGE HOSPITAL.

Some details of the new King's College Hospital in course of construction at Denmark Hill, London, S.E., were published in our issue for September 18th. We now give some particulars of the reinforced-concrete work, of which there is a considerable amount in the buildings.

The blocks comprising the out-patient, casualty, bathing and electrical, almoner and dispensary departments are in ordinary construction, but all other buildings, including the administration block, pathological block, three-storey and two-storey ward blocks, medical school, chapel, central station, main corridor, etc., are or will be constructed in Hennebique ferro-concrete.

The administration block occupies a central position on the main front, and is a six-storey building containing the offices and, on the upper floors, accommodation for nurses and servants. The main beams in this block have an average span of 29 ft., with a width of 20 in. and a depth of 28 in., being reinforced by twelve bars as tension reinforcement, and twelve bars as compression reinforcement. In addition, there are stirrups to resist shearing stresses, these stirrups being made with a small kink in one side so that they may be "sprung" on to the bars and not become displaced during concreting. The flooring of this block is of the usual solid construction. For the remainder of the work,



Cross-Section and View of Underside of Hollow Floors, showing Tubes between Reinforced Concrete Beams.



Reinforced Concrete Columns and Beams in Entrance Hall, Administration Block.

THE NEW KING'S COLLEGE HOSPITAL, DENMARK HILL, LONDON, S.E.;
WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.

however, the type adopted is the patent Hennebique hollow floor. This consists of fire-clay and concrete tubes, or hollow blocks, made to any convenient dimension but usually measuring about 20 in. wide by 24 in. long by 7 in. high. The tubes are laid in parallel rows between secondary beams of ferro-concrete, moulded in position after the tubes have been laid on planks carried at each end by the main beams, with intermediate struts to obviate deflection under the weight of the tubes and of the concrete subsequently deposited and rammed between and above the latter. The accompanying section shows the nature of the floor design. After the beams have been moulded, the concreting is continued without interruption up to the required surface level, thus forming a series of T beams of monolithic character and as soon as the concrete has sufficiently matured the supports are struck and on the removal of the planks the underside of the floor is left perfectly ready for plastering, etc.

The three-storey King Edward and King George ward blocks are now completed, the two-storey blocks Nos. 5, 6, and 7 are nearing completion, and the special ward block is just being commenced.

On the roof of the three-storey ward blocks octagonal tank houses have been built, having a height of 20 ft. to the springing of the arched roof and a width of about 25 ft.

Adjacent to the administration block is a large kitchen about 60 ft. long by 26 ft. wide, the roof of which is an interesting example of reinforced concrete. A general view is here reproduced, together with some sections (for the longitudinal section we are indebted to "Concrete and Constructional Engineering"). It will be observed that the lower portion of the roof is 4 in. thick, reinforced on both faces, and has a curve with a radius of 5 ft. 6 in. The sloping glass roof is supported on a perpendicular continuous

4 ft. high of the curved portion, this continuation being pierced to form openings for light and ventilation. These openings are 2 ft. 3 in. high, with reinforced concrete work at the bottom 12 in. and at top 9 in. The main beams of the roof are curved, and have a rise of about 10 ft. From their junction to the junction with the perpendicular continuation of the roofing proper they are 18 in deep, then increasing to 24 in. They are 7 in. thick, and are reinforced with 1¼-in. bars top and bottom, and being connected by upright and inclined stirrups sprung on to the bars. The reinforced concrete work throughout was designed by Messrs. L. G. Nichol and Partners, of Westminster, and executed by their authorised contractors, Messrs. Foster and Dicksee. Mr. William A. Pite, F.R.I.B.A., is the architect of the hospital, the clerk of works being Mr. Thomas Simpson, who acted in a similar capacity at the Royal Naval Hospital, Chatham; the St. Bartholomew's Hospital extensions; Southwark Cathedral, and Sion College.

SEA-WALL OF ROCK AND REINFORCED CONCRETE.

enlarging and improving the port of France, during the past decade has involved the construction of extensive protective works, at an expenditure of above fifty-five million francs. Previous to this, the work accomplished included the construction of a number of inner harbours and tidal basins with docking facilities, the enlarging of a new harbour channel, and the construction of two protective sea-walls known as the north and south dikes. Construction is now proceeding on a new outer harbour and inside basin of a depth sufficient to render the largest steamships independent of the tides. Among the features of this new construction is the protective sea-wall or dike, which extends from the old south dike, 1,000 ft. in a general south-easterly direction, and will form when completed the eastern barrier of the outer harbour. In the construction of this sea-wall a foundation of loose rock graded to size and of good quality was placed on the natural surface to a depth of about 16 ft. and with a width of 33 ft. The top of this bank

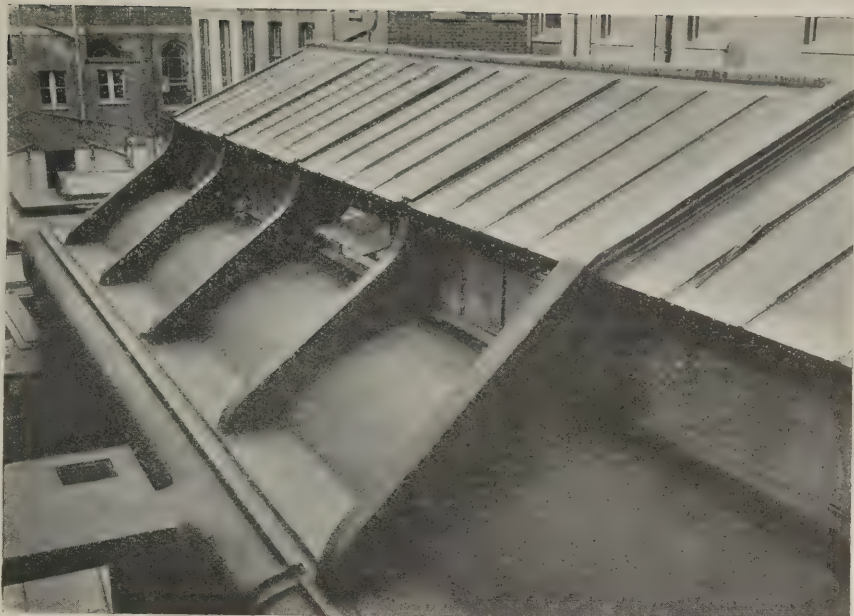
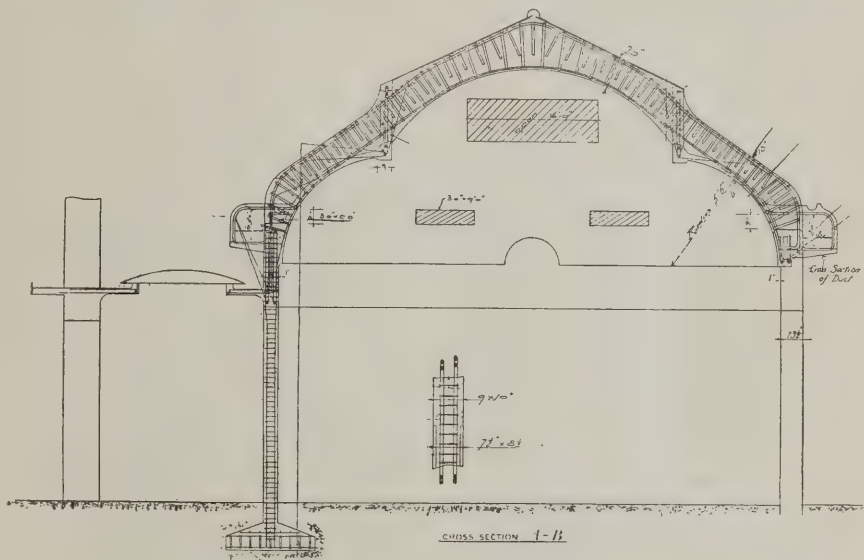
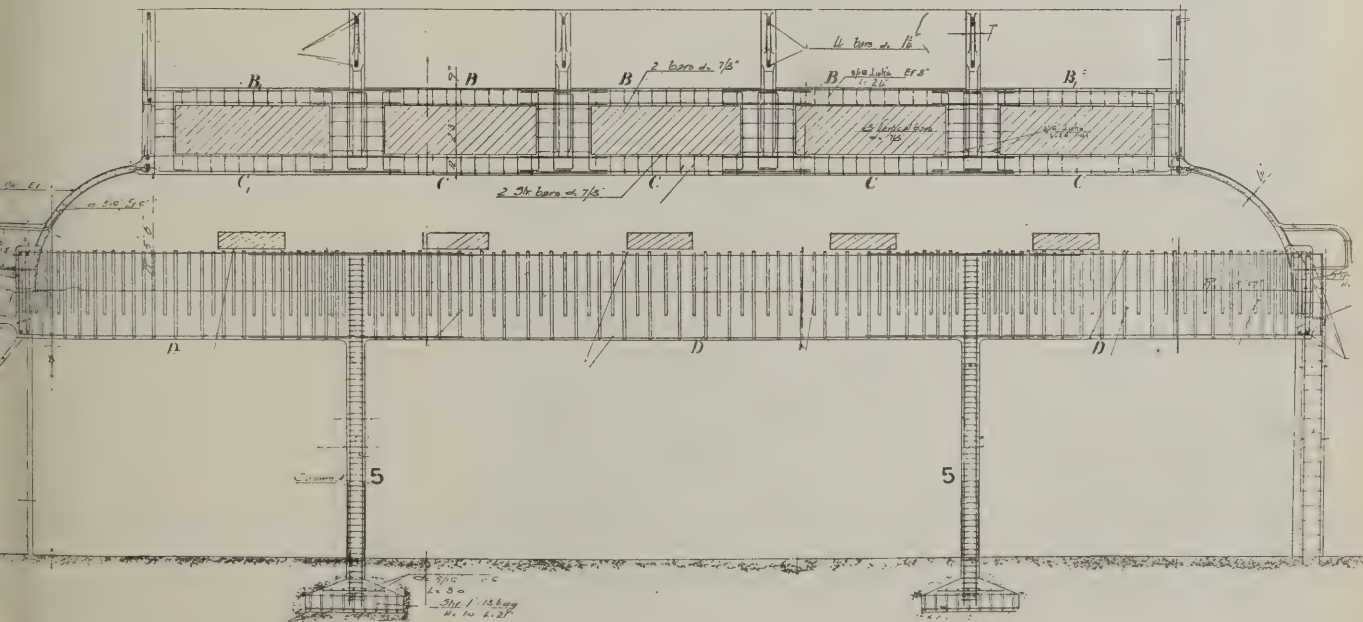


Photo: Architects' and Builders' Journal.

View looking down on Roof of Kitchen Block, showing surrounding duct for extraction of foul air.



Cross-Section of Kitchen Block.



Longitudinal Section of Kitchen Block.

of stone was levelled off with considerable care, and along the outer edge on the ocean side were placed blocks of stone, both artificial and natural, 10 ft. wide and averaging nearly 35 tons each. In front of these blocks additional hard rock was piled for a further distance of 8 ft., and brought level to their top surface.

Immediately behind this wall of heavy stone blocks are placed the reinforced concrete caissons which form the main portion of the superstructure of the sea-wall. These caissons are 82 ft. long, 20 ft. wide, and 19 ft. high. The longitudinal outer wall sections are vertical for a height of about 6 ft., and from that point they batter to a top width of 10 ft. 6 in. They are divided into two sections longitudinally by a wall located 7 ft. from the front face. These independent sections are each further divided into eight compartments by cross walls.

The caissons are built in a specially designed plant capable of handling four such units at one time. Upon completion they are allowed to season for twenty days during the summer and for twenty-five days during the winter, after which they are launched and ballasted with concrete, to secure the desired flotation. The sections are placed about 7 in. apart, and this intervening space is subsequently bulkheaded and filled with concrete.



NEW BUILDING AT COLOMBO: REAR VIEW.

After placing, the front line of compartments in the caissons are filled with concrete, while concrete is placed in the rear compartments to a depth of about 6 ft., and the remainder of the space is rock-

filled. Upon this line of caissons is built a masonry wall with a front facing of brickwork. The wall is composed of cut silicious limestone, and has a top width of 6 ft. The top of the caissons is about 7 ft. above ordinary high water, and the top of the wall is 4 ft. above the highest water ever recorded.

The space behind the wall is back-filled and this back-fill is capped for a space of 16 ft. from the face of the wall with a concrete slab. At this point an additional protective bank of a trapezoidal section is erected, 5 ft. 9 in. high and with a top and base widths of 8 ft. and 14 ft. 6 in. respectively. The front slope of this bank is paved with brickwork, while the top and rear slopes are of concrete.

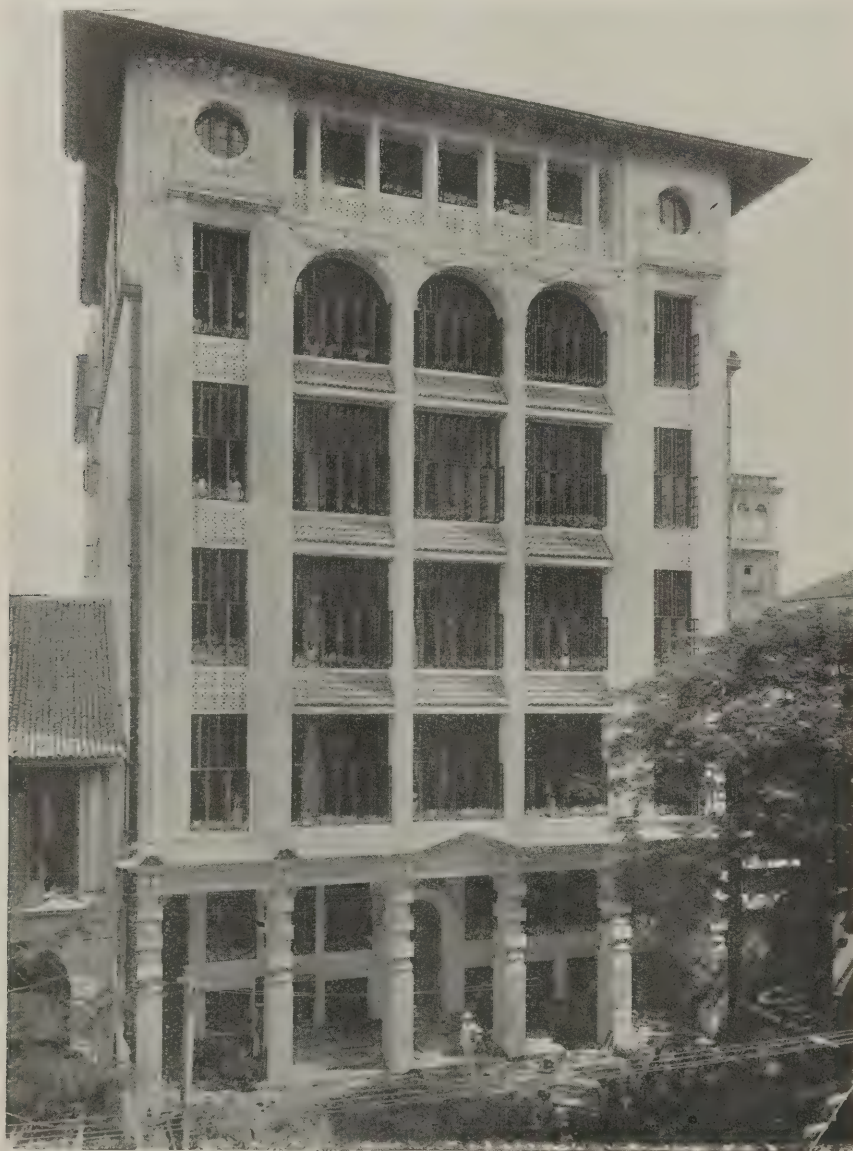
REINFORCED CONCRETE IN THE TROPICS.

A Colombo Example.

The offices and sale-rooms which have recently been completed for Messrs. Harrison and Crosfield, Ltd., in Colombo, Ceylon, offer a very good example of the application of reinforced concrete in tropical construction, for which the method appears to be particularly well adapted, not only on account of its properties of non-conductivity of heat, but also by reason of the resistance offered to earthquake shock and fire.

The building is situated in Prince Street. The front elevation shows how well concrete lends itself to architectural treatment. The whole is of cast concrete work, including mouldings, ornaments, and pierced panels, all of which are admirably executed, and the more creditable from the fact that everything has been carried out by native labour under European supervision. It is sometimes objected, even in these days, that reinforced concrete for its complete and satisfactory achievement requires something very special in the way of labour and experience; so that the construction of such a building as here shown by native carpenters and Cingalese coolies, male and female, should give heart to those architects who still have misgivings in regard to reinforced concrete. It is noteworthy of the native workman that he will do exactly what is required of him and do it well, provided he may do it in his own way.

The building is rectangular on plan with a frontage of 61 ft. 6 in. and a depth



NEW BUILDING (OF CAST AND REINFORCED CONCRETE), FOR HARRISON AND CROSFIELD, AT COLOMBO. HUBERT WALKER, A.R.I.B.A., ARCHITECT.

A LARGE REINFORCED-CONCRETE BAKERY.

A large bakery, with a frame of reinforced-concrete and outside walls of brick, has recently been completed for the Acme Tea Co. of Philadelphia. It is located on North Twenty-fifth Street, between York and Haggert Streets, with the front entrance on York Street. The structure is 161 ft. wide and 225 ft. deep, and that portion including the bake and dough rooms is two storeys high, while the rest of the building is one storey high. There is also basement space provided for the power plant, with additional rooms for cold and flour storage. The building is practically divided into five bays by lines of columns and partition walls. The outer walls above the first floor level are of brick, 17 in. in thickness, while below that level the brickwork is increased to 26 in. to the ground line, and is supported on a 28-in. masonry wall. The inner walls of the structure are principally 13-in. brick walls.

Oven Rooms.

The arrangement of the bake room and ovens was the controlling factor in determining the layout of the building. The ovens are in two rows extending north and south and facing each other, with a clear space between them 48 ft. wide and 225 ft. long. In planning the locations of the ovens, one of the objects sought was to make the working conditions in front of the ovens as comfortable as possible by permitting the escape of the excess heat from the ovens directly to the outer air. This has been accomplished by placing the ovens in one-storey sections of the building which adjoin the two-storey building on each side, the sections of the building over the ovens being provided with ventilating skylights at frequent intervals. At the fronts of the ovens the walls of the ovens are continued to the ceiling and faced with enamel brick, which shuts off the space over the tops and backs of the ovens from the bake room in front. This is of great sanitary value, as it prevents any heat, dust or gases in connection with the firing and cleaning of the ovens from entering the bake room where the dough and baked bread are being handled.

Facing the front entrance the first bay on the right has a span of 22 ft. 6 in. from

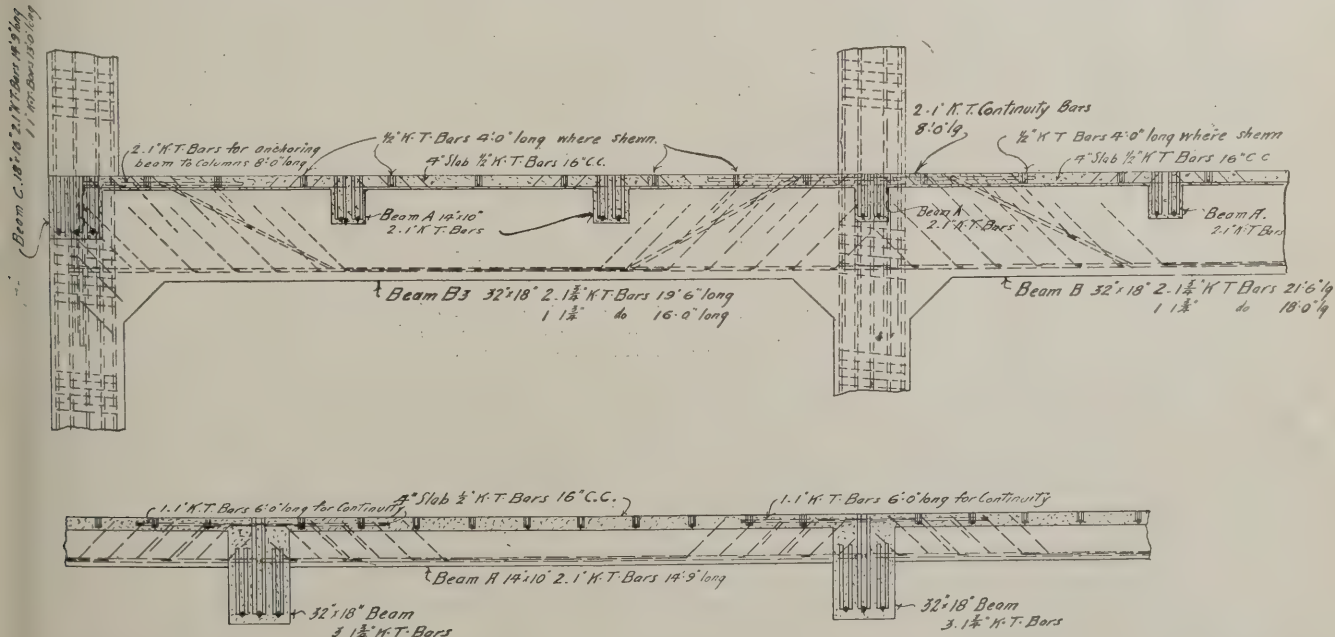


NEW BUILDING FOR HARRISONS AND CROSFIELD AT COLOMBO:
TYPICAL INTERIOR VIEW.

185 ft. The basement extends 92 ft. from the line of frontage, and there are two floors and a flat roof. The construction is of the frame type, the walls being carried by lintels. The lay-out consists of four rows of columns dividing the width into three bays, the centre bay being 24 ft. 6 in. in width between bays 19 ft. 6 in. on centres; these columns being spaced 14 ft. 9 in. apart along the length of the building. They are reinforced vertically with Kahn rib bars of varying number and size helicoidally wound with Kahn circular reinforcement, lapped in convenient lengths ready coiled and only require to be adjusted to verticals and wired in place. These columns vary from 24 in. by 24 in. in the basement, with ten 3/4-in. Kahn rib bars wound, with 1/2-in. rounds on a 2 1/2-in. pitch, to 10 in. by 10 in. supporting the floor of with four 1/2-in. rib bars and 1/8-in. wire winding on a 6-in. pitch. The main beams run across the building, the clear spans being 17 ft. 6 in. and 22 ft. 6 in. These at ground-floor level are 28 in. wide by 28 in. below the floor slab, reducing in width to 14 in. on the upper floors. The tensional reinforcement

consists of three 1 3/4-in. Kahn bars, two straight and one bent up at each end for shear. These beams are all knee braced; they are shown by the accompanying section, the end beams being anchored to the wall stanchions by means of two 1-in. Kahn bars with right-angle bends. The secondary beams are of 12 ft. clear span, mostly 10 in. by 10 in. below the slab, and reinforced with two 1-in. Kahn bars. Each individual beam, however, is designed in accordance with its particular duty. The necessary continuity between beams over supports is provided by inverted Kahn bars placed towards the top of the beam. The slab throughout is 4 in. thick, reinforced by 1/2-in. Kahn bars on 16-in. centres, with continuity bars connecting all adjacent slabs, the floor being finished with dowelled teak blocks. The staircase and lift well are carried out according to the same method.

The work was carried out to the designs of the Trussed Concrete Steel Co., Ltd., of Caxton House, Westminster, and the architect, Mr. Hubert Walker, A.R.I.B.A., of Colombo, is to be congratulated on so notable an example of up-to-date construction.



NEW BUILDING FOR HARRISONS AND CROSFIELD AT COLOMBO: TYPICAL DETAILS OF REINFORCED-CONCRETE BEAMS.

the inside face of the building wall to the outside face of the enamelled brick wall forming the front of the tile ovens which are installed in this bay. This row of ovens consists of ten double Petersen tile ovens, with provisions for two additional ovens of the same size. With these ovens the bread is placed in and taken from the baking chamber by means of long-handled wooden implements called "peels." The ovens on the opposite side of the two-storey section consist of ten double Werner and Pfeiderer draw-plate ovens, with provision for four additional ovens of the same size. The bread is placed in and removed from the baking chamber in these ovens by means of steel cars, which are pushed in and drawn out on tracks in front of the ovens, requiring a space in front of the ovens equal to their depth. This bay likewise has a span of 22 ft. 6 in., and its front portion includes a so-called "proving room" with cement floor and enamelled brick walls, with doors opening into the bakehouse.

Bakehouse and Dough Room.

The middle bay between the ovens may be said to comprise the main portion of the building, and includes the bakehouse and dough room, both of which run the entire length of the building. This bay has a span of 50 ft. 2 in. centre to centre of columns and a clear space of 48 ft. between the oven fronts in the bakehouse. This span was required to provide for the manipulation of the long-handled "peels" on the one side and the steel cars on the other. The fourth bay has a clear span of 29 ft. 7 in., and is occupied by the cooling room, which is likewise a one-storey section, with a roofing and ventilating equipment similar to that of the oven sections. The last bay, adjacent to North Twenty-fifth Street, has a clear span of about 31 ft. 6 in., which is taken up by a paved courtyard for delivery wagons. There are six 10-ft. entrances to this wagon space, and at the south end there is also a wagon scale. These entrances are equipped with wooden sliding doors travelling in metal frames, and on either side are heavy wheel guards.

Along the side of this wagon court adjacent to the cooling room there is a loading platform of the same elevation as the bottom of the wagon bodies, and in front of this loading platform there are thirty stalls, with concrete wheel guards between them, for the accommodation of the loading wagons. An interesting detail of the precautions exercised for securing sanitary conditions is that of not allowing the horses of the delivery wagons to stand in the courtyard for any length of time. The yard is paved with vitrified brick, and is so graded as to drain promptly and thoroughly. Subsequent to the completion of this work it was found desirable to make additional provision for flour storage, and a chamber of flat slab design and construction was built below this courtyard for a portion of its length. This chamber has a 4-in. floor slab and an 8-in. roof slab, with a brick lining to the stone foundation wall forming the side walls. All inside surfaces were thoroughly waterproofed with a protective coating of asphalt mastic. The columns supporting this flat slab construction are 14 in. octagonal, spaced about 12 ft. on centres, and the details of the reinforcement are typical for that class of construction.

The foundation for the columns of the bakery are in general the ordinary spread type, merely carried to a sufficient depth below the floor of the basement to insure satisfactory bearing. The column sections are hexagonal, 22 in. between faces, and

contain a steel core in conformity with a building requirement of the Philadelphia building code. The floor system of the building is of the beam and girder type with longitudinal spans ranging from about 18 ft. to 20 ft. with transverse spans as previously noted.

Among the main features of the design of the building are the reinforced concrete girders spanning the bake shop and dough room. These girders have clear spans of 48 ft. and spans centre to centre of supports of 50 ft. 2 in. They are heavily reinforced, with $1\frac{3}{8}$ -in. square twisted rods and $\frac{3}{8}$ -in. round stirrups. A requirement of the building code of the city of Philadelphia forbids the use of more than two lines of reinforcing metal in the bottom of the beams, and to obviate this condition and avoid an excess of depth and weight the beams are built with a lower flange 22 in. wide and a web about $1\frac{1}{2}$ in. wide. These beams have been designed as T sections with a top flange width of 52 in. and a total depth of 6 ft.

The steel reinforcement consists of ten $1\frac{3}{8}$ -in. square twisted bars, six of which are bent up near the ends, and four of which are straight from end to end of the girder. These are supplemented by vertical stirrups of $\frac{3}{8}$ -in. round iron provided at suitable intervals. To carry the floor between girders, beams 7 in. wide and 12 in. deep are provided. These are reinforced with four $\frac{7}{8}$ -in. square twisted bars and are spaced 5 ft. $6\frac{1}{2}$ in. centre to centre. The slab between these beams is 4 in. thick and reinforced with 5-16 in. square twisted bars, 6 in. centre to centre, with $\frac{1}{4}$ -in. square twisted bars 24 in. centre to centre, placed at right angles for temperature stresses.

In the roof construction of the mixing, or dough room, T girders of similar construction are provided, with the exception that the beams are not flanged, the span being the same as in the bake room below. The depth of these roof girders is 5 ft. $\frac{1}{2}$ in., with the T head 52 in. wide and 16 in. thick, the stem of the T being 18 in. wide.

Owing to the fact that the flues from the ovens occur immediately under the concrete beams at the point of connection with the concrete columns, it was decided to allow the concrete beam in each case to pass through the flue. This flue was accordingly divided into two branches, one on each side of the concrete beam, and again joining into a single flue above the beam, additional insulation being provided around the beam and the flues being lined with terra-cotta.

Wooden floors of maple are laid in the bake shop, dough room, and cooling room, and in all cases great precautions are taken to prevent any dust rising. The walls of the bake house and dough room are of enamelled brick, and there is a suspended metal lath and plastered ceiling in the latter, providing an air space for insulation against extreme changes in the outside temperature. The roof is of concrete with a 5-ply felt and slag covering, and is surmounted by a terra-cotta coping on a brick parapet wall. A water tank with a capacity of 30,000 gallons supplies the protective sprinkling system throughout the building. It is supported on reinforced concrete framing extending to a height of 30 ft. above the roof. There is also a fire pump connected with this sprinkler system with a capacity of 1,000 gallons per minute, taking water from the city mains.

The power plant, which is located under the south-east section of the building, is equipped with two water-tube boilers of 278 h.p. each, two compound high-speed

engines, 200 h.p. each, direct-connected to two alternating current generators.

There is also Philadelphia electric central station service, thus making practically three sources of supply and reducing the liability of a shutdown due to breakdown. A 35-ton refrigerating plant with pumps, heater, and steam apparatus, is likewise provided. The building is lighted throughout with high candlepower units of tungsten lamps, while the heating is by direct steam system, except the sponge room, which is by the blower system. In the last-named there is also an air-conditioning apparatus designed to keep the relative temperature and humidity as constant as possible. The engineers and architects on the work, which included not only the constructional features, but also the study of the conditions that make for efficiency and cleanliness of operation, were Messrs. Ballinger and Perrot, of Philadelphia, Pa.

NEW PARISH INSTITUTE, LOWESTOFT.

The parishioners of Canon Tupper-Carey at Lowestoft desired, on his leaving for York, to present him with some token of their appreciation of his services as rector. The Canon, however, could not be persuaded to accept a personal gift, but suggested that the parishioners might help him to erect a new parish institute for St. Margaret's, and the institute is now in being. It is constructed of steel and concrete, with a red brick façade, relieved with moulded sills, bands, and string-courses, and comprises two storeys, the whole of the upper floor being occupied by an assembly hall, 60 ft. by 30 ft., and seating 500 people, while classrooms on each side are formed with folding partitions, which can be removed as occasion requires. Below are a hall, 36 ft. by 24 ft., a billiard-room 24 ft. square, several classrooms, a crush hall, cloak-rooms and lavatories, etc. The architect was Mr. H. C. W. Blyth, M.S.A., of Lowestoft, and the builders were Messrs. Mobbs Brothers, also of Lowestoft. The total cost, including site, is estimated at about £5,000.

Changes of Address.

Mr. William W. Dearle, quantity surveyor, has removed from 7, John Street, to new offices at No. 13, John Street, Adelphi, W.C.

Mr. Conrad B. Willcocks, A.R.I.B.A., of Reading, has changed from Broadway Buildings to new offices at 11, Friar Street, Reading.

Pier in Stormy Situation.

With respect to an enquiry under this heading in last week's issue, we have received the following communication from Messrs. Considère Construction Co., Ltd., 5, Victoria Street, Westminster: "We notice on page 316 of the current issue of your paper a correspondent inquires as to the best method of constructing a pier in a stormy situation on rocky foundation. It may be useful to him to know that we have designed several similar structures, and enclose herewith a photograph [not reproduced] of one at Portencross in Ayrshire. We are also responsible for the new pier at the Rosyth naval base, which will be nearly half a mile long and constructed for the most part on rock foundations."

ARCHITECTURAL STUDENTS' SECTION.

Under this heading a special contributor (eminent both as an architect and as an antiquarian) will furnish information on matters relating to architectural design and construction, and will endeavour to help students who seek advice in their studies. Questions relating to construction, or to matters which can be settled by referring to the ordinary text-books, cannot be considered.

Thesis for R.I.B.A. Final.

F. B. (London) writes: "Can you inform me exactly the sort of work in the new thesis required for the R.I.B.A. Final Examination implies?"

The thesis implies individual investigation. That is its chief point. From time immemorial it has been a condition precedent to a degree in a German university, and now English universities have adopted their Honours degrees. In the opinion of the writer it is a very wise step on the part of the Institute to incorporate the thesis into their system. As it has been arranged, a student before sitting for the Final must have submitted to the examiners a thesis on some subject previously approved by them. The subject may be either in the history of architecture, or in the application of science to construction, or in monument design. In either subject the thesis takes the form of a large set of drawings, together with an explanatory report, and in time, no doubt, the Institute offers a mark of distinction in the thesis, this will become the more valuable alternative. A mark of distinction, to be recorded permanently in the Calendar against an architect's name, whether we like or not, be more important after than one in archaeology or in science.

The preparation of these theses will form the culminating work of the student's career, but also will be his most interesting and individual effort. Here he really shows what is in him. The Institute requires to know and approve the result of the thesis four months before it is submitted, and this is the minimum a student should set aside for the purpose.

If he is not a member of a residential school (where it may be supposed that architectural library exists), and can find one for the purpose of preparing this thesis, he must, especially if he is submitting a historical or a scientific dissertation, spend a considerable time in such a way. It is wise for a student to choose a well circumscribed subject, such as the enforcement of concrete domes, so that he can acquaint himself before starting with its whole literature. These dissertations will be read by experts, and the student who submits them will be expected before a jury, whose object will be to decide whether the work submitted represents any individual thought and investigation, instead of being merely copied imitation. Books alone will not be sufficient for the student who submits an historical thesis, much less a design. In the former case measured drawings of actual buildings and other evidence of first-hand knowledge of the subject written about will be of primary importance. If a design is submitted, it takes the form of a design for a building like a terminal railway station—the Soane subject this year—the student should include the setting of the building and the approaches to it from the street. An isolated design, say, for a house in an institute, though it might in itself be a perfectly satisfactory design, would not show the breadth of view or the sense of design which the Institute requires, and which requires, for such a purpose as this.

Developing Architectural Taste.

J. J. V. (South Croydon) writes: "I have a son, now eight years of age, who already shows architectural propensities. Kindly give me some advice as to his general education, and state what steps should afterwards be taken to start him in the profession of architecture. I should be glad also if you would indicate what books I myself should read with the object of fostering my boy's inclinations. I may add that at present I am a regular reader of 'The Architectural Review.'"

—J. J. V.'s inquiries cover no small field, and it will be difficult to answer them in the space at disposal. The most interesting point in them is the fact they disclose of a father who wishes to read himself in order to assist his son in after years. A son so happily situated should make a good start.

First, as to general education. An architect requires as good and liberal an education as any man in the State. If we are to believe Vitruvius, he should be a specialist in every art and science, but then Vitruvius was a pedant. In these days of general bad taste the best education for a young architect would be that which develops a sense of taste and style, and for this purpose there is nothing better than the old-fashioned classical drill in Greek and Latin literatures, with the accompanying exercise in the art of prose and verse writing. This should be the ground-work and, if possible, it should be carried as far as a degree at Oxford or Cambridge. But this alone will not suffice. The young architect, not only for technical purposes, but in order that he may think clearly and plan logically, should be well versed in mathematics. Sir Christopher Wren's mathematics, which brought him professorships at Oxford and London, is not only shown in his engineering devices, like the cone on which he supported the lantern of St. Paul's, but, and much more importantly, in the imaginative qualities of his great plans for Greenwich and Hampton Court. Good taste, then, and a feeling for abstract mathematics, are the things to be sought for and cultivated. The years that can be spent on them before reaching technical work depends on the father's income or the son's ability to win scholarships, but it may be safely said that no architect's general education should cease before seventeen; while twenty-one, which might include university work, would be far preferable.

For the technical education to start a youth on his career as an architect, the right and obvious way to-day is to send him to a recognised school of architecture, and after that to an office. In the school he gets a general insight into his art, which no single office can give him. He learns its possibilities, and has his enthusiasm fired. The choice of an office afterwards will not be wholly his parents' affair; he will have a word to say himself in the matter. If he has done well in his school of architecture course of two or three years, and has produced a good portfolio of drawings and designs, he may be able to secure a place without a premium, or even at a small salary in a good office. If by so doing he can avoid being articled,

he will have gained a great deal. The articulated pupil in a large number of offices is apt to be the young gentleman of the office to whom no one pays much attention or gives much work; the man who is being paid having to earn his salary. The Scotch draughtsmen who pour into the South in such a continuous stream always expect and generally manage to be paid, and never themselves do they pay premiums.

For the parent's private reading to give him an insight into the art he wishes his son to practise, the writer can best suggest such books as Atkinson's "English Architecture," Blomfield's "Mistress Art," and any of the comprehensive histories like Fergusson's. Out-of-date as the latter is in many ways, Fergusson's history of architecture is very good reading for the amateur. It takes him a tour of the globe, with many illustrations, and supplies many ready-made opinions on the way, which is just what an amateur likes. At present there is no book for the general reader to take its place. The nearest is an American book, "A History of Architecture," by Professor Hamlin, of New York. "The Architectural Review" itself, which J. J. V. says he reads regularly, is no bad educational exercise, for by its means he can see not only examples of old work but also the trend of modern thought.

THE FORTHCOMING SESSION.

The various societies connected with architecture and building are now formulating their programmes for the forthcoming session. Some syllabuses have already been settled, among them being those of the Royal Institute of British Architects and the Architectural Association, which are as follows:

R.I.B.A.

- November 4.—Inaugural address by the President (Professor Reginald Blomfield).
- November 13.—Mr. J. L. Ball on "Bath and Wells."
- December 2.—Business Meeting.
- December 16.—Mr. Horace Porter on "The Walls of Visby, Gotland."
- January 6.—Business Meeting.
- January 20.—Mr. F. S. Baker on "Canadian Architecture."
- February 3.—President's Address to Students.
- February 17.—Mr. A. Saxon Snell and Mr. William Milburn on "Modern Hospitals."
- March 3.—Business Meeting.
- March 17.—Mr. F. Billerey on "Modern French Architecture."
- April 7.—Mr. Cecil Brewer on "American Museum Buildings."
- April 21.—Mr. F. N. Jackson and Mr. Bernard Dicksee on "Modern Steel Construction."
- May 5.—Annual General Meeting.
- May 26.—Mr. Thomas Hastings (New York) on "Modern Architecture."
- June 9.—Business Meeting.
- June 23.—Presentation of Royal Gold Medal.

ARCHITECTURAL ASSOCIATION.

- October 14.—Inaugural Address by the President (Mr. Gerald C. Horsley).
- October 28.—Mr. Lawrence Weaver on "Small Country Houses of To-day."
- November 11.—Mr. John A. Marshall on "Marbles used in Greek, Roman and Byzantine Buildings."
- November 21.—Conversazione.
- November 25.—Mr. Horace Cubitt on "The Prosaic in Architecture."
- December 9.—Joint Meeting with Art Workers' Guild.
- January 13.—Prof. W. R. Cotton (subject to be announced later).
- January 27.—Mr. R. Caulfield Orpen on "The Architecture of Dublin."
- February 10.—Professor W. R. Lethaby (subject to be announced later).
- February 24.—Mr. Edwin Gunn on "The A.A. Excursion to Shrewsbury and District, 1912."

NEWS ITEMS.

Manchester Old Town Hall Façade.

The preservation of the façade of the Old Town Hall building, which it is proposed to erect in Heaton Park, will cost £2,120. A supplementary estimate of £650 has been presented by the Finance Committee to the City Council. By public subscription only £513 was raised, and the Finance Committee point out that more than three-quarters of the cost will have to come out of the rates.

The Passing of the G.P.O.

Housebreakers are already at work on the Old General Post Office, St. Martin's-le-Grand. Soon there will be large quantities of building materials to be sold, including about 15,000 ft. of granite, 150,000 ft. of Portland stone, great quantities of ironwork, etc. We understand that the saving of the façade is a scheme the housebreakers would favour, as even they think it vandalism to break this up.

Builder's Missing Will.

The will of the late Mr. E. H. Gill, builder, of Muswell Hill, disposing of an estate of between £50,000 and £60,000, is announced to be missing, and a reward of £50 is offered for its recovery. The will was made in 1904, and was last seen a few weeks before Mr. Gill's death. Mr. Gill began to work twenty-three years ago at Hornsey as a journeyman carpenter, at a wage of under 1s. an hour.

The "All Time" Damp Course.

Mr. A. G. Lee, of 14, John Street, Bedford Row, W.C., has just issued a new prospectus concerning the "All Time" sheet lead and asphalt damp course. Composed of a double sheet of stout art paper, the prospectus contains a good deal of practical information with respect to composition, prices, qualities, and methods of application, a sample of the damp course being enclosed within a pocket inside the second leaf.

Leicester Galleries.

Mr. Gordon Craig's exhibition of models and designs for the new theatre at the Leicester Galleries will close on October 12th, and on the same day there will be an exhibition of paintings and drawings by Mr. George Clausen, R.A. Later in the month Mr. Arthur Rackham's water-colours illustrating "Æsop's Fables" and some new drawings for "Peter Pan" will be shown in these galleries, together with the collection of nearly 100 drawings by the late Phil May formed by Mr. Lear J. Drew.

A New Book on Byzantine Churches.

Messrs. Macmillan and Co. will publish shortly "Byzantine Churches in Constantinople, their History and Architecture," by Dr. Alexander Van Millingen, Professor of History, Robert College, Constantinople; with the assistance of Mr. Ramsay Traquair, A.R.I.B.A.; Mr. W. S. George, F.S.A.; and Mr. A. E. Henderson, F.S.A. The book has been undertaken with the object of confirming what is true, correcting mistakes, and gathering additional information on the subject. Santa Sophia is not dealt with, partly because there were many obstacles in the way of a proper treatment of it, and partly because earlier writers had made the at-

tempt seem superfluous. The book has 92 page plates and 132 plans and illustrations in the text.

New Contracts for Heating Apparatus.

The Acme Ventilating and Heating Co., of Liverpool, have just secured the following heating contracts: Alterations and additions to heating apparatus, Park House Convalescent Home, Waterloo; alterations to heating apparatus, House of the Sacred Heart, Waterloo; new installation for Messrs. Wilkinson, Heywood and Clark, paint manufacturers, Bootle; new installation, New Church, Birkenhead; new installation, Primitive Methodist Chapel, Oldham; extensions to steam apparatus, Automatic Telephone Co., Edge Lane.

Port of London Contracts.

The Port of London Authority have accepted tenders, amounting to £2,350,000, for dock extension and improvements which deal with the more important works contemplated. These works form the first portion of the extensive proposals presented for the consideration of the Authority by Lord Devonport in January, 1911. The complete scheme then outlined would involve a total expenditure of more than £14,000,000. The work now placed in the hands of contractors comprises the Albert Dock (South) extension, and important improvements at the East and West India and London and Tilbury Docks.

Large Reinforced-Concrete Bridge Contracts.

We understand that Messrs. D. G. Somerville and Co., Ltd., of Westminster, have in hand the following large bridge and wharf works: Reinforced-concrete bridge (clear span of 70 ft.) at Guildford, for the Surrey County Council; Bridge Farm Bridge, Stowlangtoft, Suffolk, for the West Suffolk County Council; Reconstruction of Windsor Road Bridge, for the London, Brighton, and South Coast Railway; Extensive reinforced-concrete jetty, for Messrs. Leach and Co., Ltd., Tower Bridge; Free Trade Wharf, for the Free Trade Wharf Co., Ltd., Ratcliff, E., in addition to a large number of warehouse buildings.

COMPETITIONS.

New Buildings for University College, Dublin.

It is stated that in the above competition about twenty-five sets of conditions were issued, and that twenty-one sets of designs have been submitted. After the awards have been announced, the designs will be on view at the old buildings of the Royal University, Earlsfort Terrace, Dublin. Mr. Henry T. Hare, F.R.I.B.A., is the assessor.

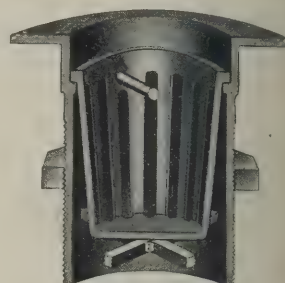
Scholarship in Architecture.

We are officially informed that candidates who are eligible to compete in the open qualifying examination for the Scholarship in Architecture at the British School at Rome offered by the Commissioners for the Exhibition of 1851, must apply in writing to the Honorary General Secretary, British School at Rome, 54, Victoria Street, London, S.W., for particulars of the subject set for the examination on or before October 31. The subject will be forwarded by post on November 5 to intending candidates, who must be careful to write distinctly in their applications their full names and addresses.

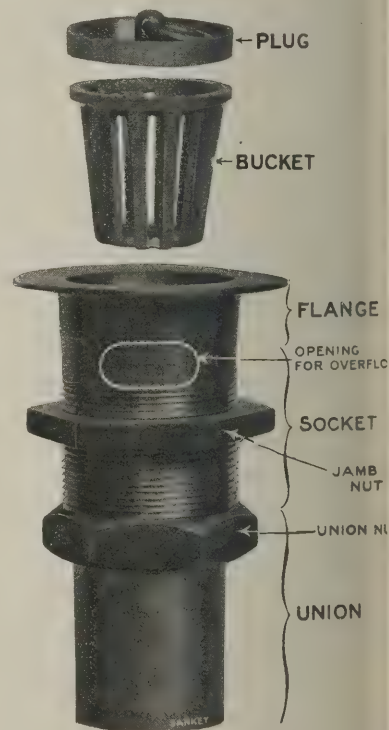
TRADE AND CRAFT.

Sankey's Sink or Bath Waste.

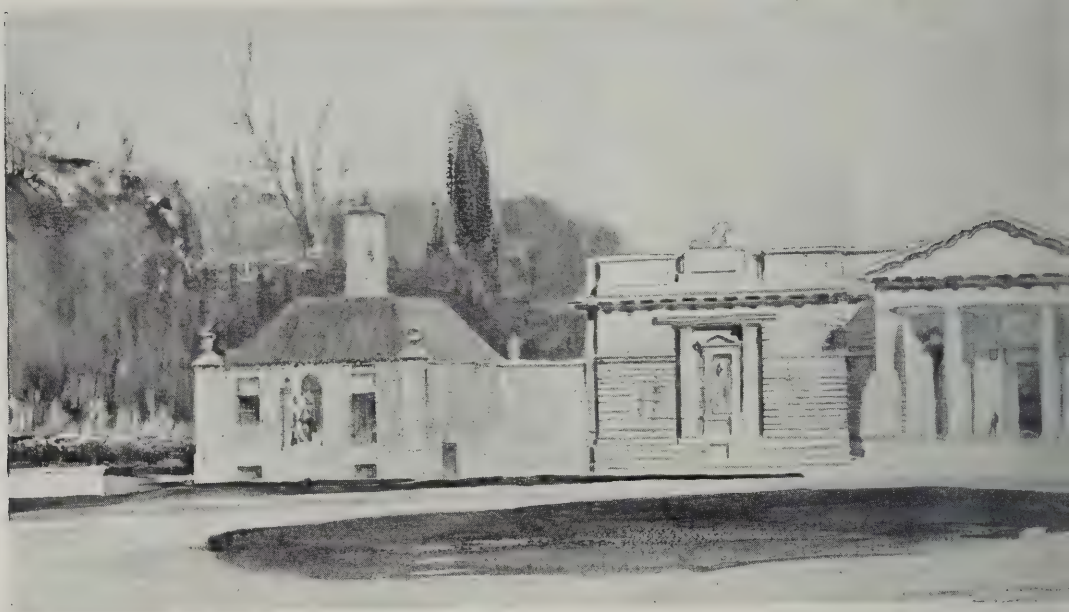
A very efficient type of sink or bath waste has been introduced by Messrs. J. H. Sankey and Son, Ltd., of Essex Wharf, Canning Town, London, E. A special feature of this waste, which is constructed of heavy solid brass, is the movable strainer bucket. This bucket

SECTION OF BUCKET,
FLANGE & JAMB NUT.

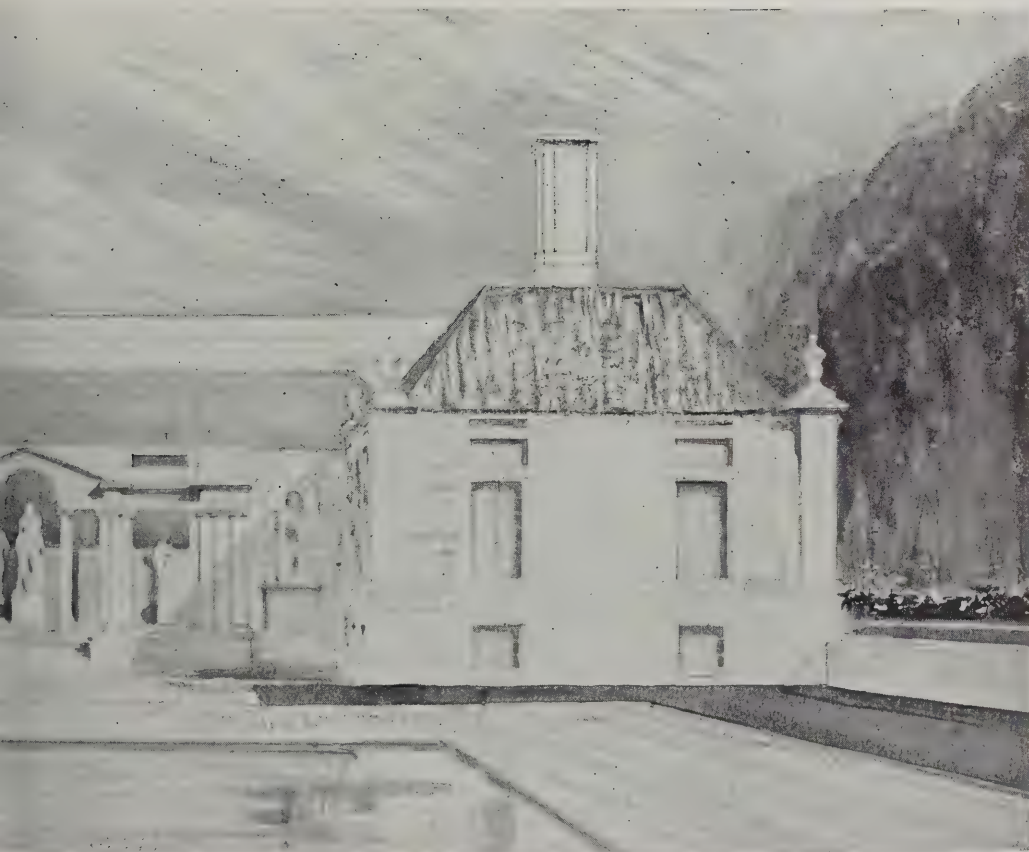
may be easily lifted out for cleaning purposes by means of a small cross bar contained within it. Provision is made for the blocking of the waste by extraneous articles when the bucket is removed, made by the cross bars (B), which are solid with the rest of the waste.



cleansing of the bucket, should it become necessary, may be quickly performed by thrusting it in the fire for a few seconds. One of the great advantages of this waste is that the water gets away more rapidly on account of the large straining area of the bucket; and at the same time the fuller flush of water tends to keep the drain in a clean condition. The waste can be made in other metals to order. Further particulars, together with prices, may be obtained on application to the makers.



NEW ART GALLERY, JOHANNESBURG.
(Royal Academy)



IN L. LUTYENS, F.R.I.B.A., ARCHITECT.
(Exhibition, 1912.)

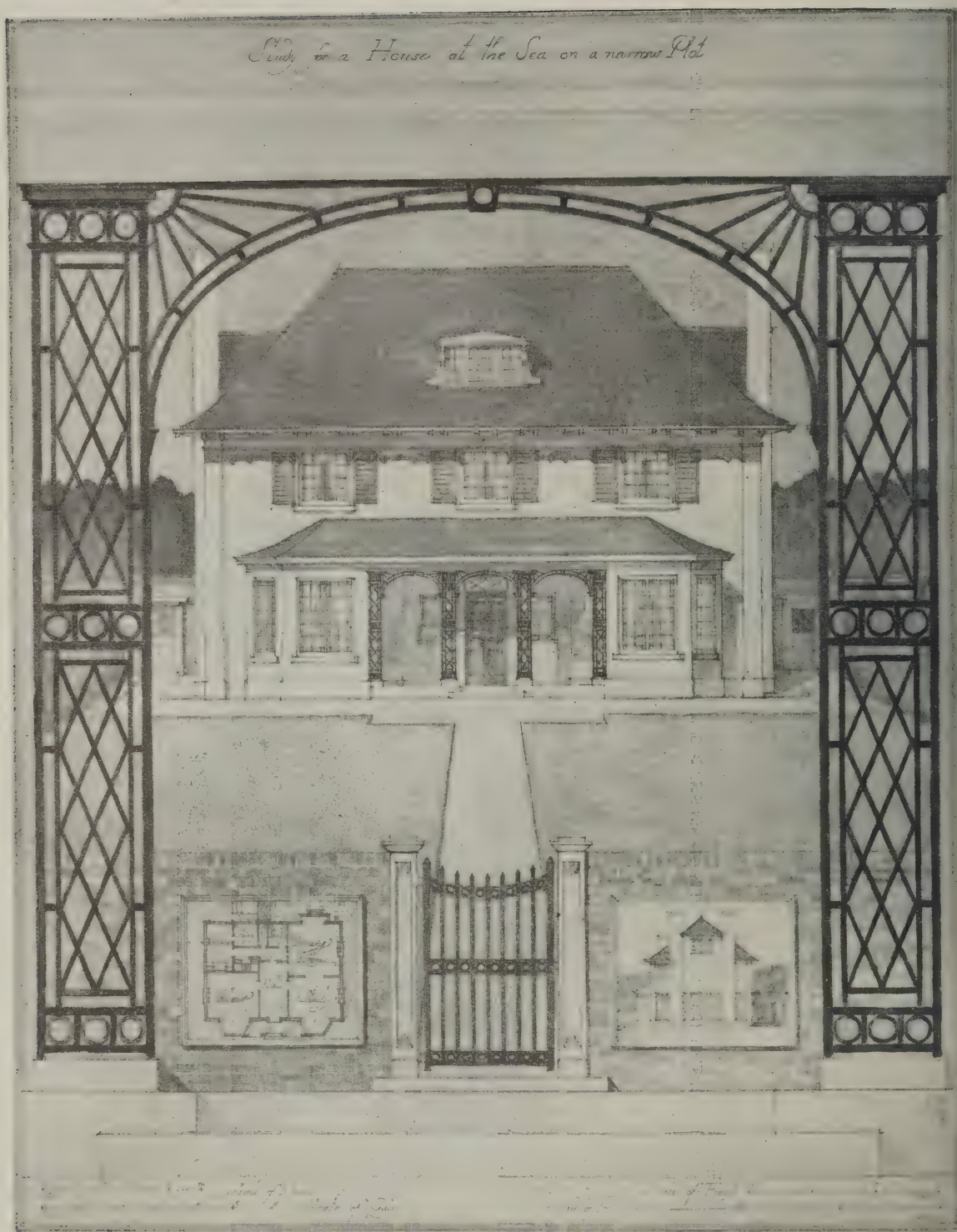
THE
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(From Piranesi.)



ABERCROMBIE, SHEPHEARD AND BOWER, ARCHITECTS.

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CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 926

The Neglect of Skyline.

HERE are few things which receive so little attention from the modern architect as the effect of his building on the skyline of the town. In his country house and cottage work he is careful enough, groups his gables or hipped roofs and chimneys in the greatest thoughtfulness, well aware that from a short distance they are probably all that will appear above the enclosing garden and tree planting. But on the town façade he thinks he is quit of his responsibility to the world with a clear cornice line, or at most an impeccable attic. Beyond that he would appear to leave his building to take care of itself, or, rather, to the draughtsman who is working out the keeper's orders and the chimney flues.

Of course this is but one of the numerous results of the prevalent lack of communistic feeling among day-to-day town builders—the same spirit which has been accountable for the absence of town-planning in the modern city and the medley of our groups of public buildings. For as regards his individual building the architect is probably right; up to the cornice the attic is as high as the eye of the passer-by can reach, and it is only when seen at a distance and in conjunction with other buildings that its skyline comes into play, more particularly if the site of the town is undulating, giving occasional vantage-points from which a view can be obtained. Then does the banefulness of the purely individualistic treatment become apparent, and the neglected roof and irregular levels of each building produce the typical uninteresting and lifeless town picture with which we are so thoroughly acquainted. We can call to mind an instance where the culprit is the corporation of the city itself (or their official architect). From the terrace of its greatest height the ground slopes away, and in the middle distance from out the dull mass of roofs soars, not a tall tower, but a gaunt red shaft crowned with a flat roof, through which protrude two enormous chimneys.

It is instructive to compare this thoughtless municipal action with the care that is being taken at Brussels in connection with the large area being reconstructed there. This is situated just below the plateau on which the Palace and famous Parc are placed, and from which charming glimpses may be had over the picturesque lower town. In the rebuilding that is taking place the small old houses are being replaced by large commercial buildings, which rise with their many stories to the level of the plateau itself. But the municipality and that admirable watch-dog body, the Comité de vieux Bruxelles, are not idle; the best houses, such as those which include the tower of the Hôtel de Ville, are to be preserved by limiting the height and outline of buildings: and at one place near the Place Royale, whence over a balustrade a distant view was obtained, it is proposed to erect a screen wall in order that the serene repose of the eighteenth-century quarters may not be disturbed by the mushroom growths which are springing up from the hot-bed of the lower city.

"Glimpses over the picturesque lower town"—the phrase sounds well and natural enough, but how comes it that this skyline, the typical one of the mediæval town, is right? for it is certainly not consciously composed. But there is all the difference between mediæval picturesqueness, which is charming, and modern haphazard, which is not. It is not intended now to analyse this difference at present, but a return to it will perhaps be made on some future occasion. Suffice it to say that there is a distinction which no one can fail to realise. Occasionally, but very occasionally, in modern times the true effect of mediæval picturesqueness is attained, and to do so there must, as in all mediæval work, be something outrageous and amazing about the means. The obvious example is New York; strange though it may sound, the astonishing vision from New York Harbour is as truly mediæval in feeling as an Italian hillside town bristling with campanile and watch towers. They both take your breath away and make you smile at the same time. If the modern neglect of skyline gave us such pictures as New York every day we would hardly complain so plaintively as we do over our drab and draggle-tailed towns. Again, we can quite imagine that when Wren found that the means he had set his heart on for new London were to be denied him, he thought that the only thing to do was to have recourse to the mediæval method, and accordingly he definitely and deliberately shot up as many church towers as he could, and designed them on mediæval principles, thinly cloaked with Renaissance detail, thus achieving a like picturesque success.

But with us we have small chance of emulating the outrageous outcrop of New York or of decorating a city with fifty-six church towers at a blow, and we must content ourselves with the other method of formal arrangement and communistic design in order to get an occasional fine view. Restrictive measures cannot by any means always be employed, but the view from the steps of some great building, the prospect seen in conjunction with a noble tower, the waterfront of a city, the sides of a "grand place," or the line of façades of a wide street might occasionally have their skylines studied. And if anyone is in search of object lessons of the result of this want of study, we need only refer him for examples of the last three to the recent waterfront of Liverpool, the new sides to the Champs de Mars at Paris, and Kingsway in London.

It is a singular and melancholy fact that Paris, which has stood before the world as the example and precept of street line and skyline, which successfully prevented the destruction of one of her finest city pictures—the view of the Ile de la Cité from the Pont des Arts—should have handed over her historic Champs de Mars to the unbridled dominion of the speculative architect and speculative builder. The skyline round this great space is ruined for ever. The Parisians have learnt their lesson and bitterly regret their mistake. Has the failure of Kingsway been equally realised by us?

P. A.

The New Front to Buckingham Palace.

WEEKS ago there were rumours that it was proposed to reface Buckingham Palace, but we were assured that the measurements then being taken were not in connection with any immediate project—they were simply to furnish data for some rebuilding in the distant future. Within the past few days, however, the secret so carefully kept has been officially disclosed, and we now know that Sir Aston Webb has actually completed a design for a new front, and that this design has received the approval of the King. Some comment has been made on the secret way in which the scheme has been evolved, and it has been suggested that in a matter so important there should have been an open competition for the design. But we think that both these criticisms are misplaced. First, it must be remembered that a new front to Buckingham Palace was part of the scheme originally contemplated for the National Memorial to Queen Victoria. Later, it is true, this was dropped—presumably because it was thought that there would be insufficient funds available—and if we remember aright the majority of the five selected architects who took part in the Memorial competition showed a substantial screen where the present railings are, the object of which screen was to cut off the Memorial from its dingy neighbour, and partly to hide the latter from view. The Memorial scheme has been in the hands of an Executive Committee—now consisting of Lord Esher, Lord Plymouth, Lord Redesdale, Sir John Stirling-Maxwell, and Lord Beauchamp (First Commissioner of Works)—and it is they who have decided what should or could be done. There is no occasion for them to put every detail of their proposals before the public for approval, and in deciding upon the refacing of Buckingham Palace as part of the Memorial scheme they are simply exercising the powers placed at their command. We think they are right in entrusting the work to Sir Aston Webb, in view of the fact that he has designed all the rest of the scheme—the Admiralty Arch, the Mall, and the Memorial itself. To have chosen another architect, either by private selection or through the medium of competition, would have been to introduce an altogether different note. This is essentially a case of one man being entrusted with the whole.

It is understood that the new front will cost about £60,000 and that it will be carried out in Portland stone. The work of preparing the stonework will be put in hand shortly, and everything will be got ready for some speedy building next summer, while the Court is absent. The scheme is already well advanced. It will be carried out by Messrs. Leslie and Co., of Kensington.

In referring to the matter the newspapers show no lack of depreciative adjectives to apply to the existing front, which was added by Blore soon after Queen Victoria came to the throne. It is called "the hideous drab stucco front," "the dingiest and the most inartistic royal residence in Europe," "the ugliest royal residence," and so forth: but, after all, the drabness of the front is its chief defect. The design is certainly not brilliant: on the other hand, if dull, it is not vulgar, and a very different opinion would be held in regard to it if it were given a clean coat of paint. Nor is it necessarily despicable because it is of stucco. Nash elsewhere in London—in Regent Street particularly—showed that a stucco building, periodically painted, could be made to present a very gay appearance; and the other fronts of Buckingham Palace—especially the garden front—offer examples of design the worth of which is not generally recognised.

Sessional Papers.

THE 1912-13 session of the architectural societies having now fairly started, we may notice, opportunely, that a newer spirit reigns among the sub-

jects chosen for discussion at the forthcoming meetings. At the Royal Institute, for example, there will be five papers on modern subjects against two on old subjects—a refreshing change from what we have been accustomed to receive in the past. This is a good sign. It is well to study the great examples of the past, but in Institute papers we have been surfeited with archæology. There has been a marked disregard of modern work. During the forthcoming session, however, the interests of our own times will receive adequate attention, as may be judged from the titles of the five papers mentioned—"Canadian Architecture," "Modern Hospitals," "American Museum Buildings," "Modern Steel Construction," and "Modern Architecture." And bearing in mind former occasions when subjects of current practical interest have been under discussion, the meetings are likely to be filled to overflowing. A subject like that of "Modern Hospitals" is sure to draw a large audience and give rise to some really profitable discussion. Should the forthcoming session prove, therefore, that the subjects of to-day are of greater attraction than those of yesterday, we hope the architectural societies will take the hint, and add archæological papers to their lists with a very sparing hand.

Unlovely Birmingham.

THACKERAY, in one of his "Roundabout Papers," confessed that he felt ashamed when he had to show the public statues of London to a witty French critic with whom he walked the streets: and now we find Mr. Arthur Harrison making a somewhat similar confession in regard to Birmingham. He says that when men come to him from London and ask to be shown the beauties and relics of the city, he is confronted with an appalling task. There are the tower of St. Philip's, the Burdett Jones windows, the interior of the hall of the Law Courts, a Bidlake church in the suburbs, and that is all! So he always hurries them off to the Art Gallery, which is the one institution of which Birmingham may be proud. And Mr. Harrison, I fear, is right in his estimate. Birmingham, like many other provincial towns where claims of business have been paramount, is not lovely. As someone has said, "Some towns are better, but many are no better." Which, to say the least, is a melancholy reflection. The causes which lead to such a result are difficult to determine. Want of education in architectural design is the chief, and want of homogeneity almost as great a contributory factor; as may be judged from the bizarre character of the street fronts. Birmingham, too, had an unfortunate friend in Terra-cotta, whose red face adds much to the blatant appearance of the city.

The reference to Thackeray, above, reminds us that Birmingham is no happier in its public statues than other towns. Yet with London itself offering so many an example what else could be expected? "The poor people in brass, on pedestals, hectoring at Trafalgar Square and that neighbourhood, don't think many of them cut rather a ridiculous figure. A Duke of Wellington or two, I will grant, though even of these idols a moderate supply will be sufficient. . . . I am sure if you were to consult the Duke of York, who is impaled on his column between the clubs, and ask his late Royal Highness whether he thought he ought to remain there he would say 'no.' Some men should have, say, a fifty-years' lease of glory. After a while some gentleman now in brass should go to the melting furnace and reappear in the shape of another gentleman's shape." There is a good deal to be said in this view, and we should be under a debt of obligation to Thackeray if his maxim could only have been adopted with zeal during the past century. It might have spared us from Parliament Square.

WILLIAM KENT AND THE TREASURY BUILDING.

MODERN writers have very little to say in praise of William Kent; but perhaps the most impartial estimate of the man in relation to the which he practised is that of Horace Walpole, who, in a critical study, observed: "He was a painter, an architect, and the father of modern gardening. In the character he was below mediocrity; in the second as a restorer of the science; in the last an original, the inventor of an art that realises painting and loves nature." Nowadays, however, it is the custom to criticise in a far less moderate fashion; Kent's architecture is dismissed as dull, his painting as contemptible, his designs for decoration as vulgar and dangerous. There is undoubtedly some degree of truth in these criticisms; but a comparison of his various designs will show that Kent is essentially the man who reflects the characteristics of the Early Georgian period in England.

It was after his return from Rome in 1719 that Kent directed his attention to architecture. The principal buildings assigned to him between that date and his death in 1748 are: Additions to Wren's building at the Horse Guards' Palace; Houghton, in Norfolk; the Horse Guards and the Treasury Building in Whitehall; Devonshire House, Piccadilly; and Holkham, in Norfolk. So far as can be judged, however, he was associated with these buildings not so much in the capacity of working architect as in that of adviser, supplying designs both for the fabric and for interior decoration and furniture. That he actually prepared working plans and elevations is open to question. With respect to the Treasury Building, it is somewhat uncertain whether Kent himself completed the design; the name of Vardy being commonly associated with it. From the beginning the design was subjected to severe criticism. In order, apparently, to allow for the passage underneath between the Horse Guards' Parade and Downing Street, the unusual feature of what may be termed a double basement was introduced. The north front was criticised in Dodsley's "London Described": "The whole front is rustic; it consists of three storeys, of which the lowermost is of the basement kind, with small windows, though they are contained in large arches. This storey has the Tuscan proportion, and above the second the Doric, with arched windows of a good proportion; but what is very singular, the upper part of this storey is adorned with the triglyphs and metopes of the Doric frieze, though this range of ornament is supported by neither columns nor pilasters. Over this storey is a range of Ionic columns in the centre, supporting a pediment. Upon the whole, the Treasury Building is not allowed to be a building composed of very beautiful parts, but it were to be wished they were smaller and larger, as there is a sufficient distance to show it." This admirable criticism is probably by John Collett, who was concerned in many of Dodsley's publications. Kent's whole design comprised two storeys, which would have materially altered the aspect of the building which the critic complains. How they would have modified the appearance of the building it is difficult to tell; but the absence of a principal entrance would still have been an obvious defect.

The real entrance was and is in Whitehall. Here, from the days of Cardinal Wolsey, a Gothic building was almost constantly used and described as "The Treasury." It had buttresses towards the street, and the passage led from it on the west side towards the Cockpit. This passage was lighted, on the south side, by the Downing Street Garden, formerly the Tennis Court, and on the north into a courtyard, with pointed windows of a late Perpendicular character. Many of these windows still remain; but those between the buttresses, like the buttresses themselves, have been

masked by Soane's building as completed by Barry. Similar windows existed in places among the streets and gardens which covered the site of Whitehall as Wolsey left it, down to 1878 or later.

Soane's designs here comprised the covering of the old Gothic Treasury and an extension southward. This extension was in turn extended by Barry, and it can now be chiefly traced in the court-rooms and offices. The exterior reveals but little of Soane's peculiar style. He designed a finish to his Whitehall front, and would have copied again the Temple at Tivoli, which he used with some success as his model at the Bank of England. The whole of Soane's design included a triumphal arch at Downing Street and a repetition of the Tivoli Temple, with a long pillared façade to the south, where the Colonial and Home Offices now stand. Sir Charles Barry, in 1846, carried out a design which, in a way, may be said to have completed Soane's. By adding a few columns at the northern end he balanced those of the southern, and finally concealed the buttresses of Wolsey's Treasury. The whole front now consists of twenty-three bays or intercolumniations.

There is nothing in any of the designs of these successive architects to show that the Court of the Judicial Committee on the south-east, the old Treasury of Cardinal Wolsey on the north-east, Kent's Treasury building on the north, the Cockpit on the west, and, finally, 10, Downing Street on the south are all part of one and the same building. No exterior view would give this impression. But all these separate parts are in actuality closely connected, and distinct traces may be found, sometimes near to one another, of the handiwork of Wolsey, Wren, Kent, Vardy, Adam, Soane, and Barry.

Kent's building contains in the lower storeys many chambers which were once of great size, but which have now been cut up by partitions. These chambers have chimney-pieces of bold design and ceilings bordered by elaborate cornices, which might easily be attributed to Wren himself. Some rooms retain their panelling of carved oak, the window frames and deep mouldings being decorated with "egg and dart."

The great dining-room, of which an illustration is given, faces eastward towards Downing Street Garden, formerly the Tennis Court of old Whitehall. This room is the work of Sir John Soane. The portrait of William Pitt above the fireplace was painted by Lawrence.

The modern representative of the Cockpit is the old Council Chamber—a room in Kent's part of the Treasury measuring approximately 30 ft. square. The ceiling is very deeply covered, so that the total height rises through an entresol, making the Treasury Chambers, which elsewhere are five storeys high, here only four. This is shown very clearly in the accompanying external view of the west front of the Treasury building. The windows of the Council Chamber are the last three towards the right hand of the building, where it joins an adjacent stone building. It has been suggested that the Old Council Chamber was adapted by Kent from an older design, perhaps by Wren; but there is an absence of documentary proof. The internal evidence seems to show that Kent endeavoured to preserve an older structure; but he was certainly responsible for the furniture and decorations.

At the present day Kent's work is but little known to the general public. This is due largely to the fact that he never worked for the public, his designs having been prepared for a few select patrons. His paintings, chimney-pieces, furniture, and the other products of his fertile invention, are only to be found in some of the great mansions of England. Of

obscure origin, Kent, who was born in Yorkshire in 1684, was apprenticed at the age of fourteen to a coach-painter. Five years later he came to London, where he practised without conspicuous success as a portrait painter; but his ability was sufficient to induce certain Yorkshire gentlemen to send him to Rome for the further pursuit of his studies. It was in Rome, where he worked under Cavalier Luti, that he attracted the attention of the Earl of Burlington, with whom he returned to England. Henceforth, he was employed in assisting this nobleman in the numerous works on which he was engaged. Under such distinguished patronage, Kent rose to considerable popularity among the richer classes. "His oracle was so much consulted," writes Walpole, "by all who affected taste, that nothing was thought complete without his assistance. He was not only consulted for furniture, frames of pictures, glasses, tables, chairs, etc., but for plate, for a barge, for a cradle. And so impetuous was fashion that two great ladies prevailed on him to make designs for their birthday gowns. The one he dressed in a petticoat decorated with columns of the five Orders; the other like a bronze, in a copper-coloured satin with ornaments of gold."

That Kent stood high in favour is proved by his appointment as Master Carpenter, Architect, Keeper of the Pictures, and afterwards Principal Painter to the Crown. At his death, Walpole relates, "his fortune, which, with pictures and books, amounted to about

£10,000, he divided between his relations and an actress with whom he had long lived in particular friendship." Like all successful men, Kent in his day had both rivals and enemies. Sir James Thornhill seems to have been offended because the Kensington Palace commission was given to Kent in preference to himself. He was caricatured, too, by Hogarth, who, in "The Taste of the Town," placed him on the summit of Burlington Gate, with Michelangelo and Raphael for supporters.

In his architectural designs, as well as in his schemes of interior decoration, Kent was strongly influenced by the work of Inigo Jones. No doubt it was the example of Lord Burlington that led him to choose Jones as models for study the masterpieces of his great professional predecessor. So far as it is possible to judge, however, Kent had not sufficiently keen a perception to appreciate the dignified restraint of Inigo Jones's work. The principles of design and construction which Jones had borrowed from Palladio and stamped with his own personality were followed by Kent with slavish and not particularly intelligent fidelity.

At the expense of his wealthy patron, Kent published in 1727 "The Designs of Inigo Jones, consisting of Plans and Elevations for Publick and Private Buildings. . . . with some additional designs." The additional designs were by himself and Lord Burlington. The object of inserting their own designs is not obvious, and serves no apparent purpose, except



THE COCKPIT, AND WEST FRONT OF THE TREASURY BUILDING, WHITEHALL: BY WILLIAM.

demonstrate clearly the source of their inspiration. The coffered ceiling successfully used by Kent at Kensington Palace and Holkham is remarkably like the ceiling designed by Inigo Jones for Whitehall Palace. Indeed, on investigation most of Kent's decorative motives may be traced to the same source. Kent was perhaps both fortunate and unfortunate in the period in which he lived. The great architects of the late Renaissance in England—Inigo Jones, Sir Christopher Wren, and Sir John Vanbrugh—were preceded by a host of men of much smaller calibre. Campbell, Ripley, Leoni, Morris, Gibbs, Ware, and others, although grounded in the grammar of architecture according to Palladian rules, were somewhat lacking in originality and imagination. Thus, overpowered by no exceptionally brilliant contemporaries, Kent was able to hold his own and to rank as an important architect.

In 1739 he was entrusted by order of the Government with a commission for the design of a new Parliamentary building, to conclude accommodation for both Houses. This design, of course, was never carried out, but the drawings were interesting examples of Kent's workmanlike capacity for designing on paper. Kent has been somewhat loosely assigned to the category of architect; for it appears that he only supplied sketches of the building, which was eventually carried out by

Brettingham, who was allowed to alter and improve his rival's design as the work proceeded. Kent's designs were only reproduced in some of the out-buildings and in various parts of the decoration of the interior.

Somewhat similar was Kent's connection with Houghton, built for Sir Robert Walpole between 1722 and 1735. Campbell and Ripley were mainly responsible for the building itself, while the bulk of the interior decoration was designed by Kent.

It is the fashion to assign Kent to an inferior rank among artists; but it must be admitted that he could inspire other men to produce fine results; for there is perhaps nothing in England more grand in conception or masterly in execution than the majestic hall at Houghton.

Kent's name is also associated with work done at Wanstead, Rainham, Stowe, Wakefield Lodge, and Kew Palace, either in designing the buildings or painting and decorating the interiors. In London, in addition to work at Kensington Palace, and the buildings in Whitehall already referred to, he designed in 1729, No. 17, Arlington Street, for Sir Robert Walpole, No. 44, Berkeley Square, for Lady Isabella Finch, and Devonshire House in 1733. His most notable works at Kensington Palace, on which he was engaged between 1714 and 1727, were the cupola



THE GREAT DINING-ROOM IN THE TREASURY BUILDING: BY SOANE.

room, the grand staircase painting, and the ceiling of the King's drawing-room; on the last, the central painting of Jupiter and Semele, is signed and dated 1725. The cupola room, his most ambitious effort at Kensington, possesses a certain magnificence of a somewhat barbaric character.

The Temple of Ancient Virtue erected in the grounds of Stowe is usually regarded as Kent's most satisfactory architectural composition. He made several essays in the Gothic style—at Esher, for instance—his designs including a screen for Westminster Hall and a pulpit for York Minster; but it is difficult to imagine that he had any genuine sympathy with Gothic. He made the designs also for the State Barge, now exhibited in the Victoria and Albert Museum, the drawings for which are reproduced in Vardy's edition of "Some Designs of Mr. Inigo Jones and Mr. William Kent." Four monuments in Westminster Abbey—to Shakespeare, Earl Stanhope, Isaac Newton, and George Monk, Duke of Albemarle—were carried out from his designs.

Kent may justly be regarded as the pioneer of landscape gardening as opposed to the earlier formal system, with which the name of Bridgman is most intimately associated. Walpole, in his eloquent essay, "On Modern Gardening," refers to the development of this art under Bridgman, attributing its advance mainly to the invention of the sunken fence; he then adds: "At that moment appeared Kent, painter enough to taste the charms of landscape, bold and opinionative enough to dare and to dictate, and born with a genius to strike out a great system from the twilight of imperfect essays. He leaped the fence and saw that all nature was a garden. He felt the delicious contrast of hill and valley changing imperceptibly into each other, tasted the beauty of the gentle swell, or concave swoop, and remarked how loose groves crowned an easy eminence with happy ornament; and while they called in the distant view between their graceful stems, removed and extended the perspective by delusive comparison."

Kent's reputation in the matter of garden design was considerable. With Bridgman he was consulted with respect to the laying-out of 300 acres of Hyde Park to form Kensington Gardens; and he designed gardens at Carlton House, Rainham, Claremont, Esher, and Rousham. His advice was also sought on the arrangement of the grounds at Holkham, Wanstead, and Livermore.

Except for the remarks of Walpole, little is known of Kent's personality. He was probably an ambitious man, and one who was prepared to accept commissions of any kind. Work was thrust upon him from all quarters, mainly from influential people, and he proved himself capable of carrying it out to general satisfaction and in face of considerable rivalry and opposition. It is doubtful, however, whether he would have achieved such success and notoriety except for the influence of his patron, Lord Burlington.

ARCHITECTS' HALF-INCH DETAILS.

REALISING the interest with which $\frac{1}{2}$ -inch details of modern work are studied, we propose to publish a regular series of such details. As a commencement we give a $\frac{1}{2}$ -inch detail of the Lincoln Free Library, by Professor Reginald Blomfield, which is reproduced on the Centre Plate in this issue. The drawing needs no description, being self-explanatory.

In our new series we shall include $\frac{1}{2}$ -inch details of work by all the best-known members of the profession, and we anticipate that the illustrations will be greatly sought after. They will constitute a unique record of modern architectural design and building construction, and will be of the greatest practical interest to architects and builders alike.

R.I.B.A. PROBLEMS IN DESIGN.

THE further selection of approved designs in connection with the above which we give this week are confined to Subject III. (a)—a detached ballroom to a large country house, connected with the house by a covered way.

We regret that in publishing the design for a cloister on page 337 of our issue for last week the drawing was wrongly attributed to Mr. R. S. Dixon. It is the work of Mr. F. O. Lawrence, of Liverpool.

THE NEW DELHI DISCUSSION.

IT is a healthy sign of the growing public interest in architecture that the diverse views held on the subject of the style to be adopted for the building of the new Delhi are allowed full expression in the "Times." Last week we gave the observations of Herbert Baker, F.R.I.B.A., and of Lord Curzon, Kedleston, both of whom supported the adaptation of English Renaissance to Indian needs.

To these views Mr. E. B. Havell, A.R.C.A., demurs. The real issue to be settled in the building of the new Delhi, he contends, is whether British architects have the same capacity as the amateur Court officials of the Great Moguls for adapting to modern uses the living tradition of Indian craftsmanship—a great tradition which for more than 2,000 years has adapted itself to the needs and ideals of every race and religion except our own—or whether we must prove the righteousness of British rule by continuing to stamp it out. Lord Curzon's letter seems to Mr. Havell to answer it. "The practical reasons he gives for inflicting Western archæological formula upon India are practical; the archæological reasons are no better than Mr. Herbert Baker's. The *raison d'être* of the modern architect is to bring archæology up to date, and, if there were no living building tradition in India, there should be no more difficulty in adapting Mogul palaces to modern requirements than the architect of the 15th and 16th centuries had in adapting Greek and Roman temples to the secular requirements of their own day."

THE CLOISTERS AT CHESTER.

THE repairs to the cloisters of Chester Cathedral now in progress under the superintendence of Mr. Gilbert Scott became necessary through the collapse of a portion of the groining of the east cloister. In restoring the masonry the workmen had occasion to examine the roof from the outside. When they discovered a superimposed mass of earth and *débris* amounting to about 250 tons. The disintegration of the groining under pressure of this great weight was not surprising. The theory entertained is that this *débris* represents the ruins of buildings demolished or fallen into decay. It is known that the monks' dormitories were over the east cloister. Later they were probably utilised as houses for the lay clerks until they fell into ruins. The roof of the cloister, cleared of its burden, shows the convex swellings of the groining arches and deep "pockets" in between. A new roof will be thrown across for protective purposes. The Dean suggests that its construction should be such as to give easy access, if necessary, to the masonry below. They have also been revealed several interesting architectural features, including the Early English arch of a former building incongruously *in situ* in the cloister roof, a quatrefoil window (one of three) at the head of a flight of steps, and a doorway communicating with a staircase through which the monks would go to their dormitories to say their night offices in the church.

HERE AND THERE.

LAST week I had the temerity to express some quite Philistine views in regard to the utility of art and the art of utility. And the expected opened. Criticism is heaped on me. I am put and the pale. But there is at least some consolation in the knowledge that my critics have a hard in making out their own case. One correspondent writes: "If, as you say, it is of greater importance to the wide bridges than beautiful ones, we may just well resign the whole business to the engineers, and let them work their will on London. In half a dozen years across the Thames we can see what engineers have done in the past, and the prospect of what they will do in the future if left to their own resources is really enchanting. Moreover, if the whole matter is put on the utilitarian plane, where does architecture come in—in fact, what is the use of art at all: to trouble any further about it?" That, indeed, is a very apt question. As a lecturer put it to one of the architectural meetings, What is the use of architecture? I am not going to take up the cudgels on that point. As regards art in general, it would indeed be a mighty relief if for a decade or two we could have an absolute cessation of striving after originality. It should be saved no end of bother over post-Impressionists and Cubists, the squabbles of sculptors, and the turmoil of art criticism generally. The point I do mean is, that it is all wrong to put Art in the place of utility. That leads one straight to the people in green frocks who play at being cottagers in little patches of suburbia: to the art cranks who are ready to swallow the latest fancy of their own particular cliques: to the seers and the superior persons and the artistic charlatans. As to the engineers, I certainly have no later zeal for their works than my correspondent except when, as Professor Beresford Pite says, an artistic providence shapes their ends; "so that scale is sheltered from squalid surrounds, glamour from smoke and steam, and from grime, gloom and glare, all come to be glorified imaginatively even a blast furnace until it imposes itself upon the soul of the beholder with the order, mystery, and power of a Gothic cathedral." In the case of civic bridges it must be admitted that every reasonable person that the main consideration is to carry the traffic over the river with the greatest possible convenience and comfort. And that is why I said a word for Westminster Bridge. If Waterloo Bridge could only be doubled in width, if only one side could be taken down and set up again 20 ft. further west, the result would be splendid. And bearing in mind the high level of ground in Lancaster Place on the north side, and the curve out to the pavement on the south side, such an alteration would seem to be quite practicable. A widening of the bridge is inevitable, and this arrangement would be a very satisfactory one. If there must be a choice of evils—in the supposititious case between the persistence of an inconvenience and an artistic effect or the acceptance of an inartistic alteration for the sake of a convenience—I plump for the latter. But that does not debar me from taking the strongest opposition to "improvements" and new schemes which are quite unnecessary—such as the proposal to cut up the podium of St. George's Hall in order to make steps for a memorial that can well be placed on another site.

* * * * *

Is it not astonishing how dull architects generally become the moment they remember their professional status. Even at architectural dinners they rarely rise above the faintly humorous, while in presidential addresses they descend to the depths of boredom. Yet at the time the men, themselves, in their own offices, may be delightfully entertaining. And the weight of professional dignity has just the same effects when architects take up the pen: else, why should books on

architecture be so uniformly dull? It is fortunate at least that there are a few exceptions, where incisive criticism or breezy humour lightens the printed page, and we cannot be too grateful to every author who sends a light shaft through the sombre air. Mr. Inigo Thomas, in his "Keystones of Building," has done this, and though the volume is no more than a little conversation in which an architect of experience explains a few matters to the layman, the profession generally will find delight in it. I have already made a brief reference to the book, and I now propose to use one of its chapters as the basis for a little homily concerning a scheme for a house in the country. It is to be supposed, then, that a certain young man succeeds to an estate in the Scottish Lowlands. The house, however, is in a ruinous condition, and the inheritor proposes to build a new one close by. He writes therefore to the architect, in London, asking if he will act on "the usual terms." The architect has qualms about this expression; he feels he ought to send a copy of the Institute schedule, but, remembering that on a former occasion when he did so he lost a client, decides that "the usual terms" are good enough. So he sets to work, goes to Scotland several times during the spring and summer, and gets out a scheme which cubes at £15,000. In the autumn the client, with his wife, takes a hunting-box in the Midlands, and business letters grow intermittent: and then the client writes to say that he is going to Monte Carlo, so that the matter must stand over until he returns after Easter. On his return he explains that he has abandoned his idea about the Scottish house, but has bought some land in the Midlands, and will build there instead. The architect is asked to send in his account for the Scottish scheme. Trouble then begins. According to the schedule the architect is not entitled to a percentage on the estimated cost, because there was no specification; the charge is consequently based on time spent, and the sum of £375 is suggested as fair. The client usually does things on a generous scale, having lately bought a second motor and sold twelve hunters, at an average of £130 each, so that the architect feels the matter may safely be left in his hands. By return of post, however, he gets a rather curt letter from the client, who says he never expected to be charged by the visit, and will certainly refuse such a charge on the work in Northamptonshire. The architect refers him to the schedule as to the charge per day, and about three weeks later he receives a letter in which the client says he has talked over the matter with a friend who knows more about these things than he himself does, and he is advised to enclose cheque for visits and expenses (about £40) and £15 in settlement of the rest of the account. Now "What should A do?" as they say in "Vanity Fair." Eventually he agrees to accept the amount offered, though it is with little enthusiasm that he goes down with the client to Northamptonshire to inspect the new site. And even this second business turns out to be all wrong in the end, by reason of the young architect who is engaged to the niece of the client's aunt, who is a dominating person intent on giving the young man a chance. In fact, as the affair develops, it appears that the latter has been looking over the original architect's drawings and has made some good suggestions. The client proposes that the one professional man should meet the other, and the matter now being regarded in this light, the original architect finds his position made so impossible that he relinquishes the work altogether and has to take £100 in settlement! From which it is obvious that, taking one consideration with another, the architect's lot, like the Gilbertian policeman's, is not a happy one.

UBIQUE.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents.

Correspondents are asked to be brief and to write on one side only of the paper.

"A Defence of Official Architects."

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Although as warmly opposed as Mr. Wigglesworth to the official architect, I am afraid I cannot quite regard his letter *au grand sérieux*.

Let us be fair and remember that public offices are not generally "run" by means of the free, unpaid labours of pupils and improvers and underpaid, unknown assistants.

He summarily dismisses the question of comparative professional remuneration as improper for discussion, and thus avoids the consideration of the somewhat superior salaries and office conditions of the official assistant.

The existence of the elusive and unknown "ghost" is then alluded to—a gross evil this, but one which is not at all peculiar to the official architect, and pervades the whole profession. I fear the solution he hints at would involve colossal political propaganda, and if successful would admittedly throw a large body of assistants out of employment, and the others concerned into inferior positions—all for the sake of creating a few more struggling private practitioners and a dimly possible, though not necessarily probable, improvement in architecture.

The ominous mention of registration by Mr. Wigglesworth suggests the possible use of the subscriptions of the members of the R.I.B.A. concerned in some measure devoted to their professional extinction. Associates and Licentiates, please note!

London, S.E.

CYRIL E. POWER.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The reference to the "ghost," contained in Mr. H. Wigglesworth's reply, in your issue of October 9th, p. 379, to my article of the above title, presents one of the most forcible criticisms which can be given of the official architect. The architectural designer is often similarly related to "unofficial" engineers, surveyors, estate agents, and pseudo-architects. It is a real grievance for the assistant throughout the profession, and because it is a common factor in the comparison of the private practitioner with the official architect I omitted its consideration. The effect, in these cases, concerns the welfare of the profession in public estimation. It is easier to rectify this evil in public bodies by reform than to attempt the abolition of the official architect. In some recent cases the name of the official architect has appeared in a secondary position to that of the engineer, and in one or two others that of the designer. As far as the profession is concerned, therefore, an alteration should not prove difficult. The position of the assistant would still remain untouched, and present an exact parallel with private practice. A difference in favour of officialdom now presents itself. An organised body of assistants could present their grievance to a council with much more probability of redress than in dealing with a private practitioner, and with much less likelihood of victimisation.

We must all agree that the prospect of "many" official assistants, being placed in private practice by the abolition of some, if not all, of the functions of the official architect, is an extremely delightful one. But, like many agreeable prospects, it lacks a practical basis. The degree of ease with which possibilities are entertained is a certain indication of the difficulty of their achievement. From the point of view of those at present employed officially, in contradistinction to

the "many" possible practitioners, drawn from the ranks, the prospect is of a more practical nature. It provides a vantage-ground for study and competition work, and often the formation of small practices, the opportunities for which are very remote when the man is employed as assistant in a private office.

The comparison of State and civic architecture with the work of the quantity surveyor and the contractor is not a clear one, many corporate bodies and municipalities having an official quantity surveyor, usually an assistant in the engineers' department, and the annual controversy *re* works departments may be expected next month!

Mr. Wigglesworth recognises that my "defence" was not whole-hearted, but that I endeavoured to introduce a comparison between the official architect and the private practitioner. In the matter of remuneration, to which he refers, there is certainly an oddity of sanctity which should be respected.

I am quite unimpressed with the value of diplomas, and, if he refers to my article, he will see that I do not mention those of the L.C.C. assistants with respect to the object, but rather to show that their membership of the R.I.B.A. entitled them to some consideration by the body in the future proposals for registration.

London, W.

ERNEST J. DIXON, A.R.I.B.A.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The publication, in the issue of your journal for October 9th, of Mr. Wigglesworth's letter on Official Architecture, omits to deal with one reason for defending same, which is suggested (unless I misapprehend him) by Mr. Dixon in his article of September 11th.

So far as I can gather, Mr. Dixon invites the profession to see, in the larger salaries paid by corporate bodies, a reason for accepting them and their work.

But is Mr. Dixon really serious in asking us to do this? Personally, I cannot take him in any such light.

Does he for one moment expect the profession to accept this increasingly serious disability to every independent practitioner when it is collected that every practising architect not connected with a public body is compelled to contribute in rates towards the upkeep of a department and staff which is to-day literally *taking bread and butter out of his mouth*?

Further still, is he, as a ratepayer, satisfied that the departmental work makes for the *best and most economical* carrying out of public work as opposed to that of the private practitioner?

Has he forgotten the lesson of the Metropolitan Board of Works? If he has, Glasgow, as shown by recent decisions, has certainly not done so.

And the Scotch are a proverbially able race when the obtainment of value for money spent is concerned.

To conclude this short letter I would ask Mr. Dixon and other supporters of officialism this pertinent question: If experience, dearly bought in the past, has proved that in the domain of pure building, the return for the expenditure of public moneys was secured by the bureaucratising of this form of public activity, then is it unreasonable or unfair to promulgate the assertion that to officialise architecture will ensure a precisely similar result?

Bedford.

K. GAMMELL, A.R.I.B.A.

Architectural Examinations.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I have often been told that examinations in their present form, are a very poor method of testing a man's ability and experience. My experience at the Society of Architects' last examination certainly shows

there is a great deal of truth in the statement. For instance, the paper on quantities. Four questions out of five could not be correctly answered by the formula for arriving at the area of a circle forgotten by the student. In my case, I had temerarily forgotten the fraction .7854, and, therefore, one question was open to me. Again, in the paper on sanitation, surely it is a stretch of imagination to class questions on "foot-candle-power" under the heading; also questions on "carbon and metallic elements in electric lamps."

A little inspection will soon show how badly worded the first question in building construction. It runs as follows: "The centre line of a stanchion carrying the end of a bressummer is 9 in. from the centre of a wall. Design a foundation of such dimensions that the maximum pressure on the soil does not exceed 2 tons per square foot when the direct load is twenty

even supposing that the foundations could be founded to the centre of the party-wall (the width is given), the stanchion would not be in the centre of the foundation; therefore, the foundations, if occupying 20 square feet, would in place exert a pressure of more than two tons per foot upon the soil, and any tendency of the party-wall to settle would add to the instability of the foundations. As the depth of the party-wall is not given, obviously the foundations of the stanchion must be separate from the foundation of the party-wall.

Examiners would do well to remember the true object of examinations—i.e., to test the skill and experience of the candidate, instead of questions upon subjects of which the value to an architect is, to say the least, doubtful. A few questions of land surveying and levelling, steel construction, bending moments, the calculations of girders, would be far more to the point.

W.
Architects' and Surveyors' Approved Society.
The Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I shall be glad if you will kindly grant me a little space to remind those who have applied for membership forms for membership of the above Society, that it is advisable that these forms should be filled in and returned at once, so that cards for the coming quarter (commencing October 13th) may be sent to them. The daily additions to the membership list are exceedingly gratifying, but there are many persons connected with the architectural and engineering professions who are not yet members of any Society for the purposes of the Insurance Act, and I would urge them to apply for membership forms at once, as it is hardly necessary to point out that it is to their interest to join a Society which has been formed for their benefit.

F. R. YERBURY, Hon. Secretary (*pro tem.*).
8, Tufton Street, Westminster, S.W.

Education in Architecture.
The Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—A proposal has been made to my council by some of the more prominent men in the architectural profession to the effect that the Society of Architects should organise a system of education on similar lines to the Ateliers of the Ecole des Beaux Arts. In connection it is proposed to institute a method of examination which will tend to eliminate from amongst the students all those who show no real aptitude for the profession and whose energies could therefore be more profitably employed in some other calling.

It is felt that this proposal constitutes a wise development, and one which should prove most popular to all grades of the profession, and my council are anxious that it should be introduced at the earliest

possible moment. They have therefore appointed a committee to confer on the subject and to consider ways and means. In addition to three of their own members appointed by my council, the Right Hon. Lord Saye and Sele, Sir George Riddell, H. V. Lancaster, Esq., F.R.I.B.A., and A. R. Jemmett, Esq., F.R.I.B.A., have consented to serve on the committee referred to, and it is anticipated that other prominent educationists will also co-operate.

I shall be glad to hear from any other gentlemen, particularly architects, who sympathise with the scheme and are willing to assist the Society in putting it into operation at an early date.

C. MCARTHUR BUTLER,
Secretary of the Society of Architects.
28, Bedford Square, London, W.C.

Building By-laws in Rural Areas.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—At a meeting of the committee of the British Constitution Association, held at its offices, 11, Tothill Street, on Friday, October 4th, 1912, the following resolution was unanimously passed:

That this committee, acting in the interests of individual liberty and personal responsibility, cordially welcomes the recent Circular of the Local Government Board in favour of securing the more flexible application of building by-laws in rural areas, and engages itself to do its best to influence the sanitary authorities to give the subject their most careful attention.

W. V. COOPER, Hon. Secretary.
The British Constitution Association,
11, Tothill Street, London, S.W.

Simple Method of Calculating Wind Pressure on Roofs.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Referring to the article by W. E. Barker "On Wind Pressure on Roofs" in your issue of September 11, perhaps the writer would explain on what reasoning he gets a multiplier greater than unity for any inclined surface with a horizontal wind pressure.

X.
[The generally accepted formula for wind pressure is Hutton's, which, based upon his experiments, is as follows:

$$F\theta = F_v \sin \theta \cdot 1.84 \cos \theta \quad 1,$$

where θ is the angle of inclination of the surface to the horizontal and F_v the force or pressure of the wind on a vertical surface.

The co-efficients given in the writer's diagram are based upon Hutton's formula. The formula in question is perhaps more complicated than actual experiments on the subject of wind-pressure would seem to justify, but the small amount, viz., 1.50 over unity for a pitch of 70° given in tables of co-efficients, makes but little difference to the total result so far as saving in material goes.

The writer would refer your correspondent to Molesworth's pocket-book and "The Theory and Design of Structures," by E. S. Andrews, for other formulæ on this subject.—W. E. BARKER.]

"Two Pioneers in Town Planning."
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In the article under the above heading in your issue for October 2, quoted from the "Morning Post," the Pavilion in Oxford Street is stated to have been the work of Smirke. Allow me to correct this mistake: The Pavilion was designed and carried out by James Wyatt.

R. W. COLLIER, F.R.I.B.A.
London, W.C.

THE PROPOSED GUILDHALL
IMPROVEMENTS.

THE scheme designed by Mr. Sydney Perks, F.R.I.B.A., the City Surveyor, for the improvement of the London Guildhall, was last week under consideration at a special meeting of the Court of Common Council. It will be remembered that the scheme proposes the rebuilding of the wings flanking the porch, and the provision of new art galleries, law-courts, and offices; the cost being estimated at £130,000.

The plans and models of the new extensions show that the western wing will cover the exact amount of ground that the present wing occupies—a length of, roughly, 100 ft.—but the eastern wing is to be carried right down to the Irish Chamber, 55 ft. longer than the western side, and the 30 ft. passage, known as Guildhall Buildings, where the City of London Court stands, is to be arched over, so that there will be no break in the eastern wing walls from the Guildhall Tavern, on the Gresham Street corner, right up to the Guildhall itself. It is on this fact that the opposition to the scheme is chiefly based, but there is also objection to the design of the façades of the new wings, as being out of harmony with the façade of the Guildhall, and to the height and solidity of the new wings, which will dwarf the old Guildhall.

Mr. Cecil Jennings, chairman of the City Lands Committee, in moving the adoption of their report, criticised the suggestion that the committee ought to have invited competitive designs for the work. He urged that the Corporation were quite capable, with their own professional staff, of undertaking all that was required, and that, in the past, competitions amongst architects had not always proved satisfactory. Such a competition in this case would involve an additional expense of £8,000. In determining the style of the elevations, account had to be taken of both the Guildhall itself and of Wren's neighbouring church of St. Lawrence Jewry, but in preserving Dance's original front it was not essential to adopt his style for the surrounding buildings. A Gothic design would be incongruous and unsuitable, and very wasteful of space. The scheme would prevent the closing of the Guildhall Library on festive occasions—sometimes as many as twenty-eight days in a year—and would obviate the necessity of constructing temporary marquees and cloak rooms for Royal and special entertainments. The erection of a new Art Gallery with greater light and better access was all-important. One wall of the great staircase was about to be filled by a fresco presented by the Commonwealth of Australia delineating the opening of the first Commonwealth Parliament.

Mr. F. Brinsley-Harper led the opposition at the council meeting with an amendment that the scheme should be referred to three architects to be nominated by the Royal Institute of British Architects. Afterwards, discussing his attitude with a newspaper representative, Mr. Brinsley-Harper said that the Guildhall, with its 700 years of history, was probably our most precious civic monument, and any architectural scheme in connection with such an honourable and historic building deserves the consideration of the most representative architects of our century. "I am not condemning the design of our City Surveyor, but it must be remembered that he is only one man," he said, "and in such a serious change we should have at least another, if not several opinions. The famous old Guildhall is entitled to some consideration before it is dwarfed between two big new wings that are likely, I am assured, to rob it of its beauty.

"The City Lands Committee appointed the City Surveyor to draw up the designs, rather than put the work out for public competition, on the grounds of economy. It has been stated that such a course would

have cost an extra £8,500. My amendment—to submit the City Surveyor's scheme to three leading architects—would not have cost more than £1,000 at the most, and I claim that that is a small amount considering that the total alterations are put down at £130,000. If the buildings are worth spending £130,000 on, it is only just that £1,000 should be spent in making sure that we are spending it in the right way."

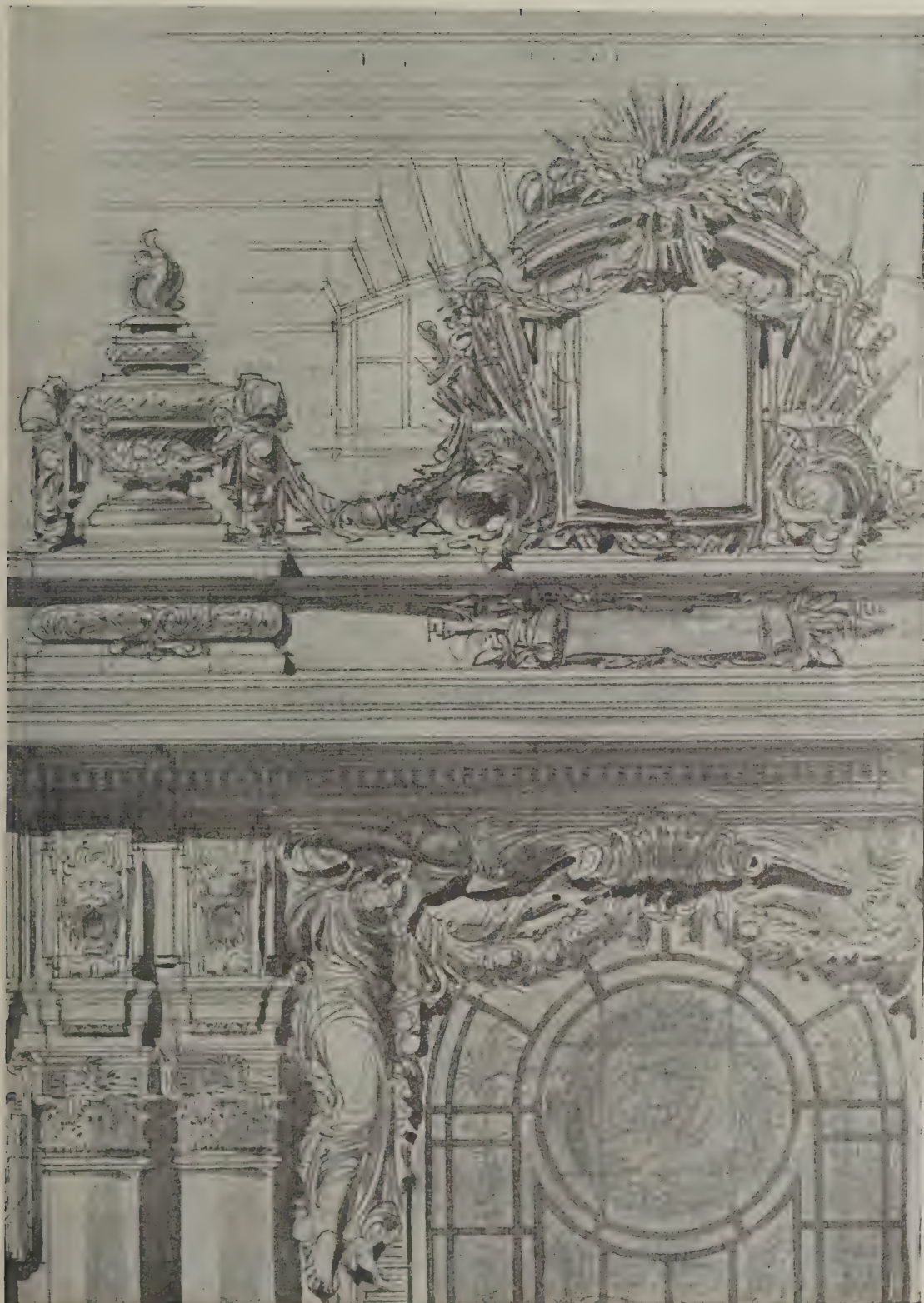
Mr. Deputy Morton, M.P., Mr. Deputy Wallace, Mr. Frederick Walker supported the amendment, Mr. Richard Davies, Sir George Woodman, and William Dunn spoke against it and supported the design by Mr. Perks.

Mr. Banister Fletcher, Professor of Architecture at the University of London, cautioned the Court against accepting a scheme drawn on the advice of one architect. He said that he found himself at variance with the Committee. His main objection to the scheme lay in reference to the proposed prolongation of the eastern wing by means of an archway across the street known as Guildhall Buildings. He agreed with the employment of the Renaissance style, but the central outstanding feature, both architectural and civic, was the Fifteenth Century entrance gateway or porch, with the side portions in Dance's Gothic, which he believed always maintained should be preserved. The new wings should be subservient to that front, and form a symmetrical setting. The proposed treatment would destroy the symmetry of Guildhall Yard by making a lop-sided court, with an eastern wing 55 ft. longer than the western wing. That would be an architectural mistake; for besides spoiling the symmetry of the yard, it would connect the principal entrance of the Guildhall to a block of mediocre office buildings adjoining a public-house. That was just what should be avoided. Their efforts should be concentrated on disengaging the Guildhall—the great Civic palace—from any surrounding building, especially those which had no connection with it. He thought that the open space now existing should be preserved at all costs, leaving Guildhall Buildings free from any cavernous archway such as was proposed. At a time when public attention was concentrated on town planning and the importance of the axial lines in relation to chief thoroughfares was insisted on, and also when the London County Council were building a municipal palace to vie with the Houses of Parliament in architectural grandeur, it would be unfortunate if the ancient City of London should consent to a scheme which would mar the dignity of the Guildhall of the Capital of the British Empire.

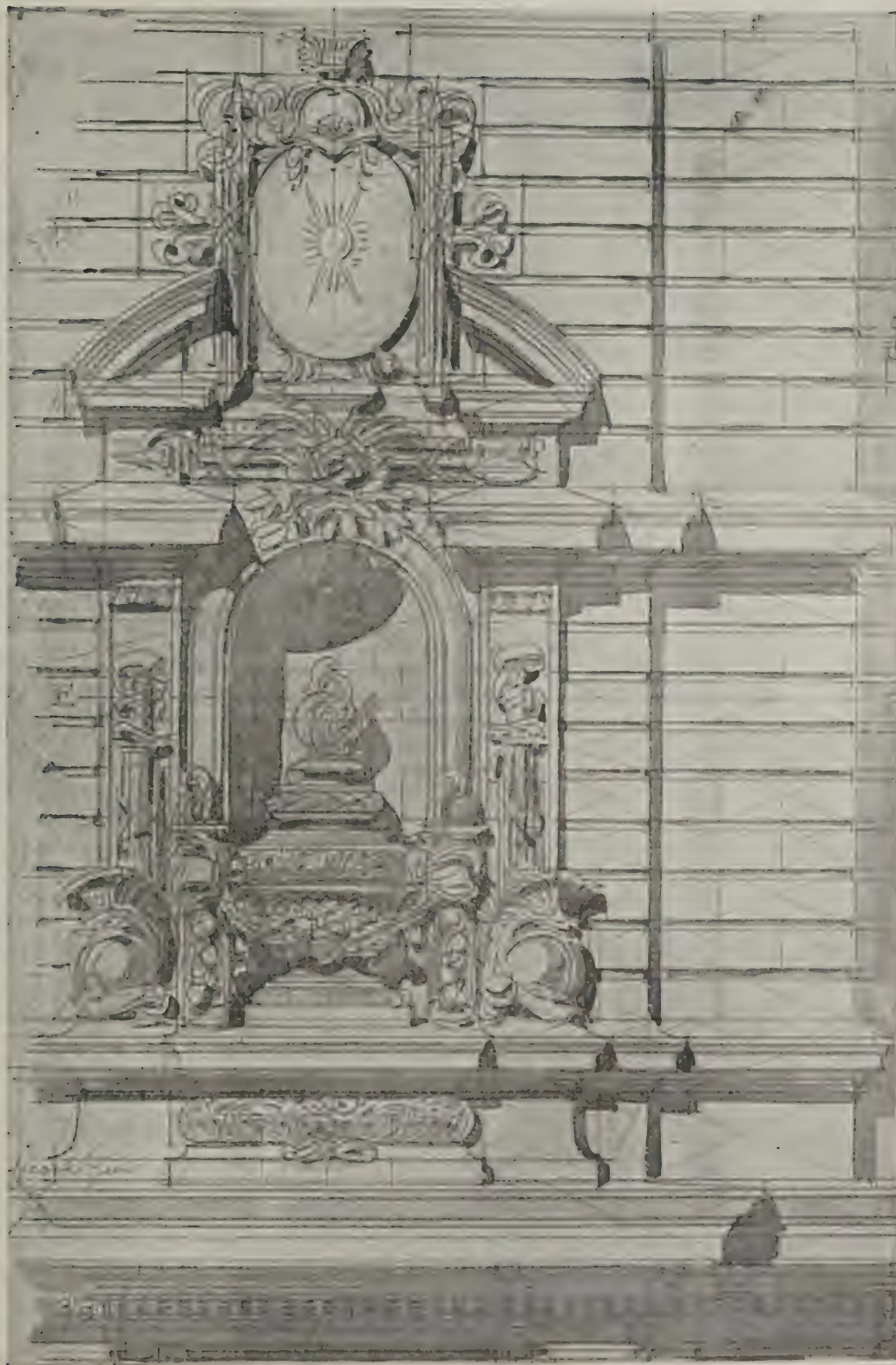
Mr. Brinsley-Harper's amendment was lost. A further amendment designed to throw the elevation open to competition was lost. The scheme was then approved, subject to the question of finance going to the Coal and Corn and Finance Committee.

SCULPTURE ON THE WESLEYAN HALL

ON pages 409 and 411 of this issue we reproduced from the architects' drawing two portions of a sculptured ornament for the Wesleyan Hall. Photographs of the executed work have already been published in our pages, and we hope later to publish some further views. The illustrations now published are of interest as showing work on the main façade which has not yet been executed, owing to the restriction of light to the Westminster Hospital, which would be affected by the two projected towers. The stone work on the main façade terminates at present with the main cornice. It is of special interest therefore to see, from the drawings we reproduce, the details of the ornament which is intended for the complete façade. It is masterly work, full of original feeling.



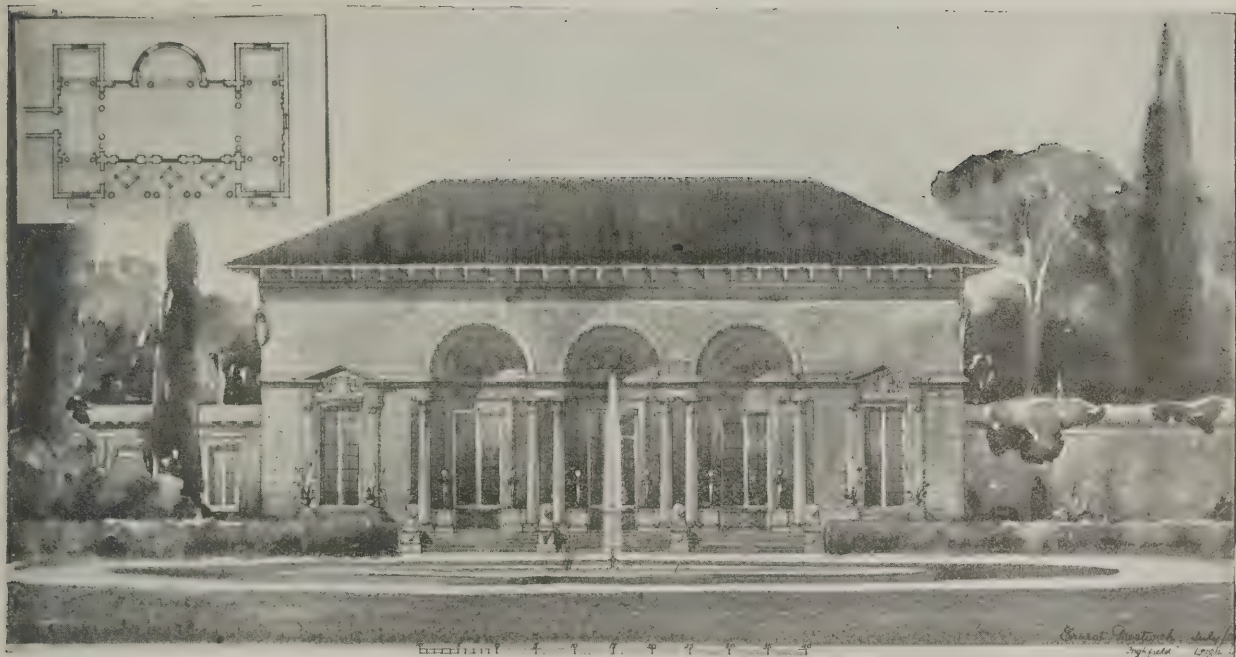
THE WESLEYAN HALL, WESTMINSTER: DETAIL OF ARCHITECTS' DRAWING FOR SCULPTURE
ON MAIN FRONT. BY LANCHESTER AND RICKARDS, FF.R.I.B.A.



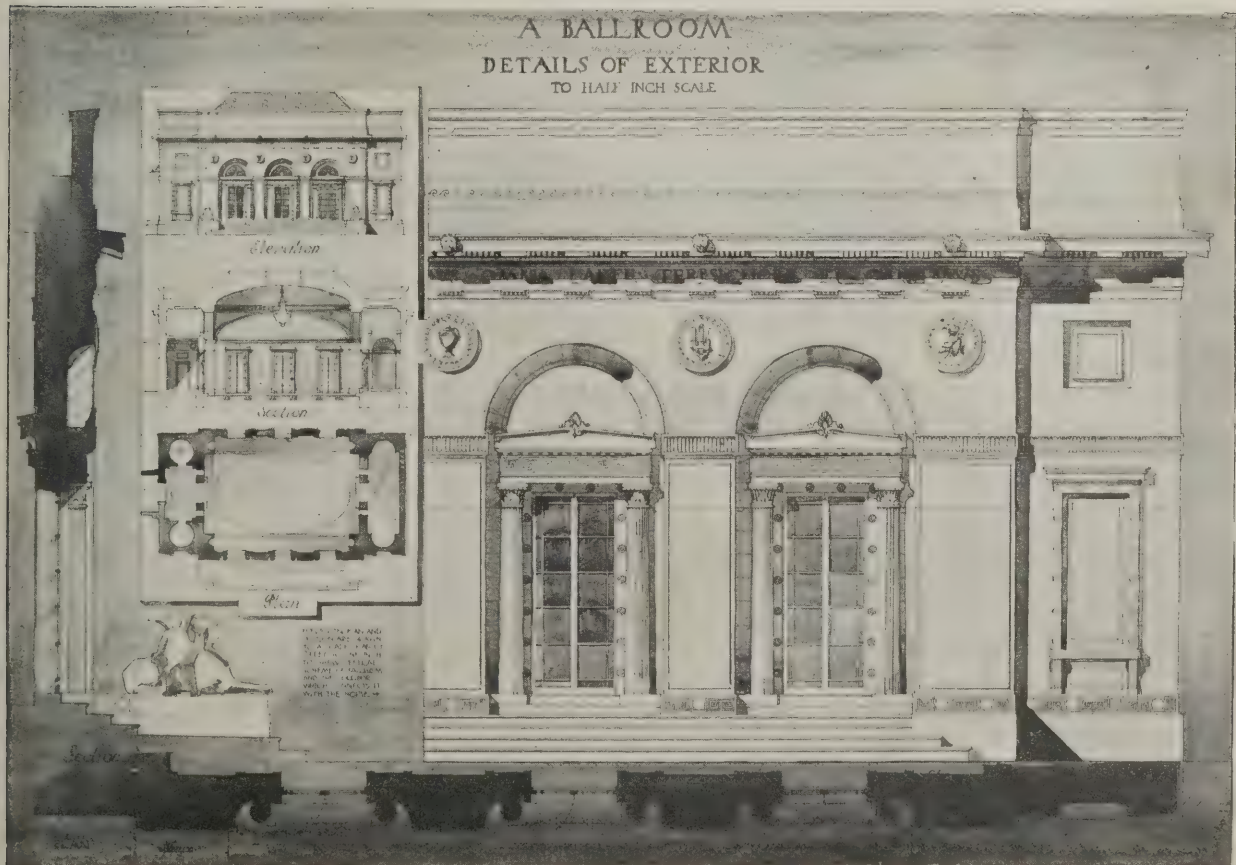
THE WESLEYAN HALL, WESTMINSTER: DETAIL OF ARCHITECTS' DRAWING FOR SCULPTURE
AT BASE OF TOWER. BY LANCHESTER AND RICKARDS, FF.R.I.B.A.



TRAJAN'S COLUMN, ROME. RESTORATION BY L. GINAIN.



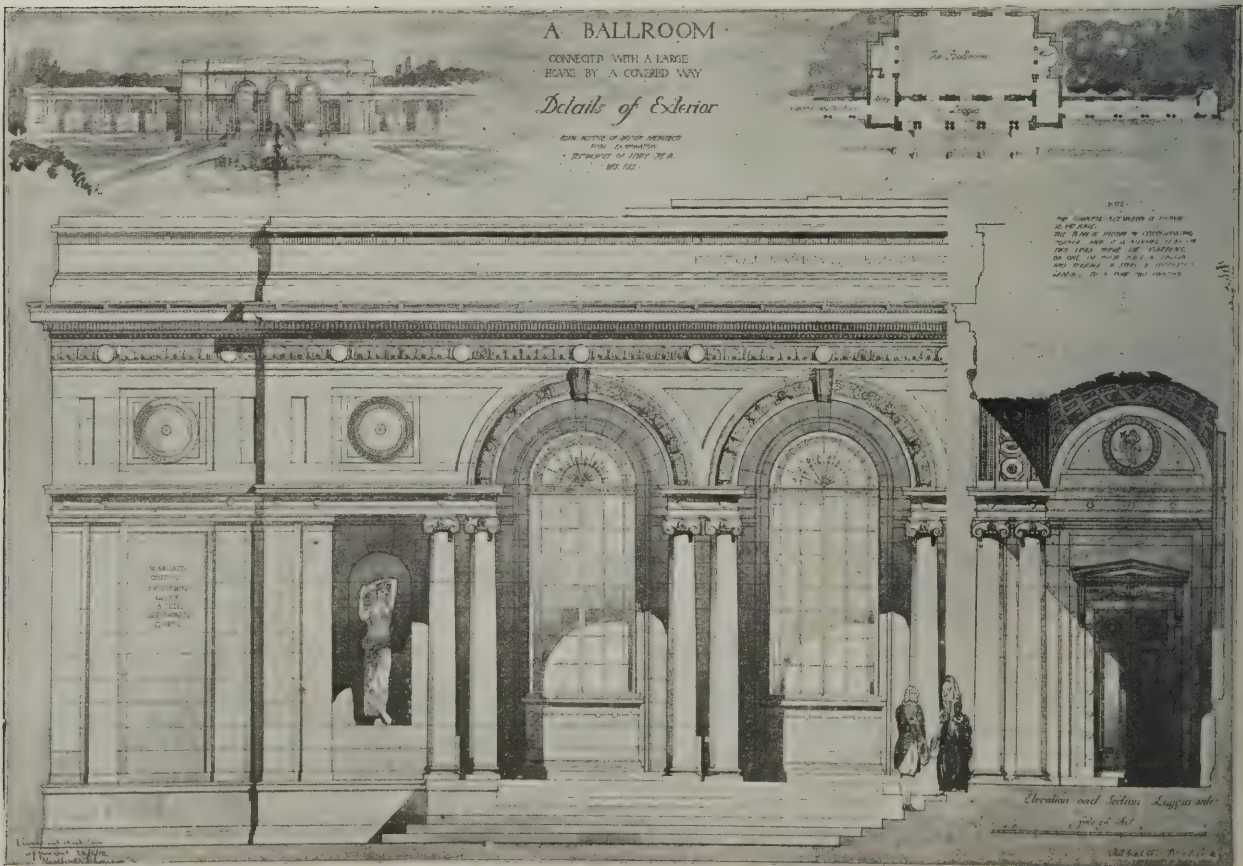
By E. C. Prestwich (Liverpool School of Architecture).



By H. A. Dod (Liverpool School of Architecture).



Detail of Interior.



By H. C. Bradshaw (Liverpool School of Architecture).



Photo: J. Blake.

HOOD WITH 17TH-CENTURY BRACKETS, KINGSTON.

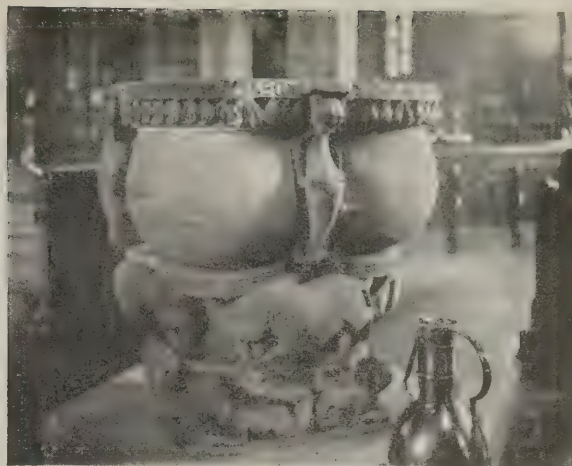
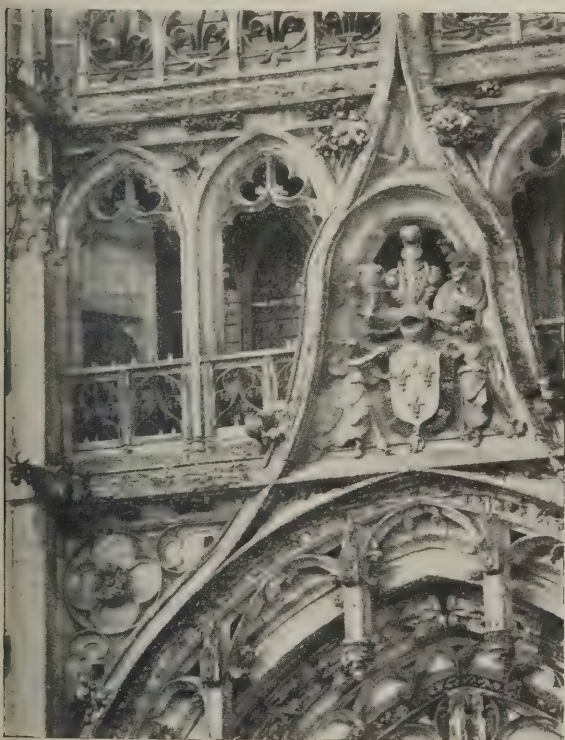


Photo: W. T. Hanman.

FONT IN ST. MARY'S CHURCH, STAFFORD.



Photos: V. Constable.

SEN LIS- CATHEDRAL, FRANCE: SOUTH TRANSEPT.



Photo: G. N. Kent.

SCREEN, WALPOLE ST. PETER, NORFOLK.



Photo: M. C. Young.

A PRIMITIVE SHOP-FRONT, CORFU, GREECE.

PHOTOGRAPHS SUBMITTED IN THE HOLIDAY COMPETITION.

HOLIDAY COMPETITION.

On the preceding page we give six additional photographs selected from those submitted in the Holiday Competition, which closed on September 30th. The following particulars relate to the illustrations:

The South Transept, Senlis Cathedral.

While the main body of Senlis Cathedral dates from the twelfth century, the transepts were built during the years 1530 and 1556. The work may be considered as typical of the latest phase of the French Gothic period. The chief characteristics are well shown, from the arrangement of the front—a gable flanked by two turret buttresses—to the details, which show traces of Renaissance influence. Other typical usages are to be found in the design of the rose window, the absence of symbolical sculpture, the numerous traceried parapets, the traceried border to the gable, and the tympanum window over the doorway.

Font in St. Mary's Church, Stafford.

This curious font is almost unique, and has given rise to much discussion. It is, apparently, very early Norman or Saxon, but no positive account of its origin is given.

An Old Shop, Corfu.

The interest of this old corner is that it shows the ancient type of shop, with its stall-board, not unlike the old London type of shop which a few years ago existed in Clare Market.

Wrought-iron Hood Brackets, Kingston.

The wrought-iron brackets supporting a hood over a door to a cottage on the London Road, Kingston, are of early seventeenth-century design, beautifully executed. The one on the right, being on the weather side, has suffered from the ravages of time, but the one on the left is almost complete. Such local detail ought to be preserved when this property is pulled down.

Screen in Walpole St. Peter's, Norfolk.

This screen is of oak. Its date is about 1560. The Perpendicular work in the church is very fine, particularly the south porch with parvis over. The church was restored about three years ago, when some old oak-panelled pews, with doors hung on frog hinges, were removed. The remains of these pews may be seen in the ringers' gallery. There are also a few fine Tudor bench ends with poppy-heads.

THE GHENT EXHIBITION BUILDINGS.

The two railway stations at Ghent seem respectively to symbolise the mediæval beauty and the modern industrialism of the city. The old station, in the centre of the town, does no great violence to its sedate surroundings. It is dignified, spacious, and even quiet. To gaze upon a restful flower-garden in the centre of a large station is surely a unique experience in railway travelling: and the feature is somehow felt to be in keeping with the towers which have kept watch over Ghent for half a dozen centuries, with its fine old civic halls, with its quaint merchants' homes, its peaceful rivers and canals, carrying slow barges or ocean-going boats.

On the other hand, the new station of St. Pierre, on the main line—Brussels to the east and Ostend to the west being each less

than an hour away—is thoroughly typical of modern progress. It is an imposing structure, with a stately tower at the entrance, a frontage extending about a thousand feet, and fine booking halls and offices, all well planned. In view of the exhibition, the traffic accommodation of this station is being considerably extended.

From this station a general view of the exhibition buildings at once presents itself. Some of them are close at hand, others stretch a mile away. The nearest view is that of the stately dome at the chief entrance, flanked by graceful minarets on either side. Four colossal statues of the classical bull, one of the national emblems of Belgium's strength, guard the doorways. A tour of the vast grounds of 350 acres shows that the builders are well abreast of their work and that the buildings will in all probability be completed long before the date of opening, which is now about six months ahead. An important point is that the whole business is the collective effort of a community, and not of some mammoth contractor or speculative building firm brought in from outside. Ghent is building the Ghent Exhibition, and every firm of any standing appears to have a hand in the business. Nor is building enterprise confined to the Exhibition grounds. The builder is busy on every hand—putting up here an hotel which will accommodate a thousand guests, there a terrace of private houses, or new shops and warehouses, and laying out several new streets and squares. Also the hand of the restorer is busy here and there in the old quarters of the city, but the restoration is being done sympathetically. No glare of modern brick or plate-glass is dimming the classic lines of the old work. The modern note is struck on modern soil; the old is undisturbed.

The 27 acres of industrial palaces which will house the international display are already nearly covered. The British, French, and Belgian palaces are already roofed in. Steel and reinforced-concrete construction have been employed throughout. The last touches are being given to the roofs, so that there can be no damage from winter or even autumn gales and storms. The concrete flooring and the special beds for machinery will thus be laid under most favourable conditions, while the cabinet work and the decorative finishing touches will be carried on without the unseemly rush which so often characterises exhibition work. The directors encourage the exhibitors to keep up to time by making a concession of 20 per cent. for all stands which are fully ready before the opening day.

The central courts have in their midst a well-planned lake, but their most striking feature is the fine classic marble fountain which will extend across the full sweep of the Central Avenue, with a fine water-fall. The Central Courts are outlined by avenues of trees already flourishing, and are bordered by spacious colonnades which will give welcome shade to the throng of visitors in summer.

The Horticultural Palace will be a permanent structure. The span of its roof is one-third wider than that of the Crystal Palace, the building being in the form of a cross, the long arm of which represents the horticultural show proper, the broad transverse section forming a large theatre or concert hall; or it may be utilised for horticultural display when required for large exhibitions such as that of next year. Facing the entrance halls are the vast hot-houses. All these colossal structures are already being roofed in, and the roof and

pillars are all fitted in revolving sockets to relieve strain and thus avoid fracture. The restaurants, each of which covers about three acres, possess central dining-halls capable of seating a thousand or more, and are on the lines of the Metropolitan Hotel, near Cairo. These are surrounded by half a dozen or more other dining-halls, which are all being rapidly finished and floored with mosaic.

Around the Horticultural Palace will be a spacious promenade, built over the remains of the fortifications of the Old Citadel, which was constructed a century ago by the Duke of Wellington, when Ghent was one of a chain of forts erected as protection of the frontier of Belgium against Napoleon's ambition. The hundred acres of park, with its glowing flower borders, will form a setting almost too good for the numerous side shows.

THE LE CHATELIER TEST OF CEMENT.

At the New York Congress of the Association of Testing Materials, the accelerated test for volume-constancy of cement was the subject of considerable discussion. The Copenhagen Congress had, after considerable discussion and in a perfectly regular manner, passed a resolution adopting the Le Chatelier test as the standard accelerated test for volume-constancy. A considerable amount of agitation on this subject has, however, arisen in Germany since 1909, and some German experiments with the Le Chatelier test having given unsatisfactory results, the German delegates believed themselves justified in inviting the congress to rescind the formal resolution of Copenhagen. A resolution to that effect in the names of Gary and Martens was supported by the contention that much cement which did good service would fail to pass the test. In reply, it was contended that the discrepancies complained of might be due to personal causes, or to the fact that cement, particularly if unsound, is chemically labile, and will change in regard to its behaviour under this test in the course of time even if sealed in an air-tight can. Further, the Le Chatelier test has proved satisfactory in industrial practice in England, France, and Scandinavia, and has been adopted by both users and manufacturers in those countries, while German cement makers also have no difficulty in producing cement capable of passing the test. After some conferences between those principally interested it was agreed to withdraw the German resolution, in the first place, because it was found to be inadmissible for one congress to rescind the resolutions carried at the preceding congress otherwise than upon the report of a committee which had been appointed to re-investigate the question. A happy solution was found in the proposal emanating from the British delegates, and readily accepted by the Germans, to refer the whole question to a new committee to be appointed for that purpose, and in order to secure complete confidence in the impartial and independent conduct of the experiments, the committee was instructed to have series of check experiments carried out by the national testing institutions of the countries principally concerned, such as the National Physical Laboratory, the Königliches Materialprüfungs Amt at Grosslichterfelde, and the National Bureau of Standards at Washington. Pending the report of this committee, the Le Chatelier test remains the standard adopted by the International Association.

THE MODERNISING OF BUILDING BY-LAWS.*

BY FREDERICK W. PLATT, M.I.M.E.

The author discusses the effects of the recently issued circular in which the Local Government Board directs the attention of local authorities to the need for reviewing the existing codes of by-laws, in recognition that modern materials and methods are not always adequately sanctioned in the existing Model Code, which was first issued in 1877.

THE recent circular letter of the Local Government Board to local authorities directing attention to the need of reviewing the existing codes of by-laws in operation in the various local governing bodies of England and Wales is deserving much attention.

By this letter the Board recognise that the use of modern materials and modern methods of construction is neither adequately nor precisely sanctioned in the Model Code, which was first issued in 1877, and has from time to time been extended and revised, but is still mainly in phrasing identical with the original Code.

That the Board have until now shown reluctance to modify or revise their code, in which great care and forethought had been expended, is not to be wondered at, anyone whose duty it has been to draft building by-law will know how difficult it is to find words which, while being precise and fulfilling the conditions of statute law, furnish that *via media* which reasonable persons feel they can support. The Model Code has, on the whole, been serviceable. It now needs modernising, and the intention of the Board to do so is warmly welcomed.

By-laws dealing with new streets and buildings may be made under section 157, Public Health Act, 1875; section 23, Public Health Acts Amendment Act, 1890; and section 24, Public Health Acts Amendment Act, 1907.

The Object of By-Laws.

The object of making rules or by-laws might shortly be said to be this: That every individual who decides to lay out land for building purposes or to erect buildings thereon shall, in such laying out and subsequent development, provide that in building a quota of open space for public purposes and for domestic purposes, shall construct each building so as to protect against fire, be healthy in itself, be properly drained, be responsible for its share of the outfall sewer, so that all could collectively form a properly developed town.

That by-laws can be drafted which will be sufficiently comprehensive and explicit to furnish all the guidance needed to attain this is certain. They will not check building, as is popularly supposed. They will ensure good building.

The Old Code Obsolete.

The authors of the Model Code, in drafting the earlier forms of by-laws, had relied mainly to buildings of stone or brick construction, and apart from what is concerned their retrospective character, they are inappropriate to types of construction now in use, such as buildings of hollow bricks or slabs of terra-cotta, concrete, reinforced brickwork, etc.; for hollow or timbered walls, and steel or other metal walls hung with tiles, slates, etc., and in where necessary with incompatible materials; for buildings where cars are employed, and where large window openings are needed; or for the thickness of walls of out-buildings.

Again, the ordinary clauses for the laying out of roads do not permit of the class of roads which have been designed in some garden cities, neither do they differentiate between the type of paving needed for varying grades of roads or for exceptional arrangements which are demanded in certain cases by the configuration of the ground. In a few words it might be said that the Code is voluminous without being comprehensive, and is too restrictive. It deals with details rather than types.

Suggested Reforms.

What form should modernising take? Take the question of walls, floors, and roofs—that is, to ensure “due stability” in them! Should not the knowledge of the behaviour of materials be utilised in determining the various sizes of the respective parts rather than tabulated sizes of the thickness of each wall or of the materials being set out in the form of a by-law? For example, the present Model Code prescribes that buildings shall be enclosed with walls termed external, party, cross, or return walls constructed of hard incombustible materials such as good bricks, etc., and then proceeds to give the thicknesses of the walls according to the particular height the wall is to be erected, neglecting entirely whether any loads were to be transmitted to such walls from floors or subsequent loading when in use.

In this matter of loading it is common practice to find that the joists of buildings of the cottage type were rarely built into party walls, but often are supported upon a wall half-brick in thickness and an external wall, the thinner wall thus carrying a greater proportion of the weight of the building than the thicker external wall. Obviously such an external wall, if built of the by-law thickness, might be either too thick when not loaded or too thin when loaded. The Code does not recognise a wall half-brick in thickness, nor does it, under such conditions as here mentioned, prohibit its use. Another fallacy is where almost the whole of a storey is required as an opening. The Code here requires sufficient piers to be provided, or in some cases storey posts, but never states what a sufficient pier or storey post is, or how such is to be determined.

Again, modern buildings of the warehouse type are rarely simple in construction. They are often built upon highly valuable land which leads to a varying distribution of the loads supported by the floors, whose strength has to be determined by the loading circumstances of each particular case. To apply a model code based upon a universal system of high loading to such buildings would result in unnecessary expense being incurred in the thickness of the walls or strength of the floors, without necessarily providing uniformity of strength throughout the building.

Large Buildings.

Therefore, if full advantage is to be taken of this opportunity to revise an existing code of by-laws, consideration should be given to the desirability of including in the revised code power to determine that the various parts of at least buildings of the “public” or “warehouse” class

should be so designed that when loaded as intended the buildings would be in equilibrium throughout. Obviously much care would be needed to draft governing regulations. The following points, however, might form the subject of consideration:

(1) The type of building and the purpose for which it would be erected.

(2) The type of material to be used in its erection.

(3) The maximum stresses permitted in such materials.

(4) The method of calculation to be followed in determining the resistance of the materials, and the effect of the loading on the various parts for the determining of both external and internal forces.

(5) The extent of the details required from the building owner to enable the local authority to be satisfied that due stability would be obtained, and the nature of the declaration that the building would be duly supervised during construction.

(6) The nature, type, and extent of the tests to be made during and after erection to ascertain that the above conditions were fulfilled.

(7) The guarantee that the building would not be internally stressed to an extent exceeding the designed resistance.

Some such regulations would at once provide all the power that a local authority needed to ensure “due stability” in every portion of buildings other than those of the domestic type, and would remove from the Code all those cumbrous rules respecting thickness of walls and their attendant variations, consequent upon some contingency often more or less remote.

In matters of means of egress, disposition of seating in public assembly rooms, position of staircases, situation and type of sanitary accommodation in buildings, all could be more usefully regulated by taking into account the type of construction of the building as well as the nature of the business or undertaking to be carried on therein. What always obtains under the Model Code is that a minimum of structural stability, based upon an ordinary use, is prescribed; and this becomes in practice an actual maximum.

Domestic Buildings.

Domestic buildings would require different treatment from public or warehouse buildings. They are subject to greater changes and different usage. Yet modernising even in their “structural stability” by-laws is possible. Why should walls require footings if resting upon sufficient concrete or rock foundation? Why should parapet walls be needed, with all the risk of conveying moisture into the houses? Why should window frames be required to be set back $4\frac{1}{2}$ in. from the face line of buildings? Why should overhanging eaves be prohibited, considering all the protection from dampness they afford to the walls beneath them? Many other questions could be usefully asked by those revising by-laws.

And the inquisition could be carried on throughout those by-laws which are made for “purposes of health.” Why should isolating traps with their ground level inlets be demanded? Why should not power be obtained to enable a regulation to be made governing the cubic contents of a

room, and prescribing the ratio between height, length, and width of all living-rooms instead of the present one dealing only with height? Should not a regulation be possible requiring all dwelling houses to be provided with a pantry or larder, and also that all living-rooms should have at least one window in them through which the sunlight can pass every day the sun shines? By-laws dealing with the construction, direction, width, length, and paving of streets should be carefully modernised. Should not regulations be made enabling the owners of streets to complete them with dustless paving rather than with the ordinary sett paving, which is often laid with open insanitary joints?

Type of Laying-Out.

The limitation of the number of houses or other buildings in a row should be considered, and rules prescribed to direct that the course of streets should be such as to enable the maximum amount of sunlight to pass into the buildings erected upon their sides, and to further make provision for the encouragement of open spaces at the front in addition to the land set apart for street purposes, the latter of which might be reduced in width if additional space were provided for use as garden land in front of buildings. Some balancing clause, whereby this type of laying-out would be made possible, would have an encouraging effect upon the minds of persons who would be considering the development of land, especially if the effect of the clause would be to reduce the cost of street works.

Many other points might be adduced to show the need of modernising, but one question should be kept foremost in the mind of those considering the subject, and this is it: That the local circumstances should be fully considered before determining the phrasing of any particular regulation.

More Elasticity.

While much might be learned by a careful perusal of other local authorities' by-laws, it would not be wise to follow blindly a by-law made for similar purposes by another authority unless it was found to precisely and definitely express the exact needs of the authority desiring to adopt it. For experience does not confirm the desirability of accepting without question a by-law or regulation made by another authority upon some subject which is under consideration. This, together with a code of by-laws framed upon the knowledge obtained of the behaviour of materials under modern loading, would place a local authority in possession of by-laws freed from the objectionable features attributed to the present Code—namely, their elasticity and applicability only to stereotyped forms of construction. Some local authorities might urge that a code based upon these suggestions would be expensive to administer, because a technically trained staff would be required for the work, but as buildings in themselves are an essential indication of a town's prosperity, and are vitally necessary not only for the town's business but also for the housing of the population engaged in such business, it is not unreasonable to claim first importance for the subject. That men in the service of local authorities are capable of administering a code of by-laws based upon technical knowledge is beyond doubt, and it is not too much to say that such a code would receive the approval not only of the members of professional societies engaged in construction, but also of all whose desire it is to have well-developed towns with soundly constructed buildings therein.

THE DEVELOPMENT OF CRANES, HOISTS AND LIFTS.

The enormous developments of the crane industry during recent years have had the effect of very considerably modifying building practice; and the needs of building contractors must, in turn, have suggested many improvements in the design of hoisting and travelling machinery and gear. Builders are still among the chief users of such apparatus, and will therefore read with much interest the following notes on the development and present position of the crane industry, which are mainly derived from an article in the "Times."

Old Style Cranes.

Formerly hand cranes were in a vast majority, hydraulic designs came as rivals, and afterwards the steam cranes were the novelties. Cranes of from 30 to 50 tons power were the mammoths of the period. These were often operated by hand, four or six men dividing their efforts between two winch handles, which with treble gears and two or three fall blocks lifted the maximum loads very slowly. A safety pawl falling into a ratchet with a monotonous click prevented the load from running down if the pressure on the winch handles was momentarily slackened. Raking fixed jib cranes of various but simple types, derricks, overhead travelling cranes, and goliaths were the principal representatives then of hoisting machines; but modern improvements have resulted in the general substitution of mechanical hoisting for hand lifting.

Modern Standardising Methods.

The most remarkable aspect of the crane industry at the present time seems to be its intensive specialisation, the majority of crane builders now restricting their manufactures either to one general class of crane, or to designs that are very closely allied, as, for example, overhead travelling cranes, goliaths, and bridge cranes, or steam cranes, fixed and portable, or hydraulic cranes, or electric hoists, and so on. Standardisation, too, is carried much further than it was, while certain leading dimensions must necessarily be subject to variations, the essential elements remain unaltered, and cranes are thus made and stocked in large numbers. Moreover, parts that are standardised are tooled and built to gauge and templet, and much better workmanship is put into them than was once the case, notably in gears, bearings, and provision for lubrication; and this standardisation naturally results in greater efficiency as well as greater economy; the high-class crane of to-day costing but little more than the inferior machines of the past.

The Motive Power.

The sphere of the crane industry has been vastly extended by the new power agencies, chiefly compressed air and electricity. The growing employment of electric cranes of many kinds has been greatly favoured by the facts that electricity is practically universally adopted for lighting even when not employed for other services, and that central stations supply power at little more than nominal costs to big and little consumers alike. Even the big firms cannot generate current so cheaply as they can buy it,

and the interesting fact may be observed of firms selling their waste heat to central stations, and purchasing it back in the form of current more cheaply than they could generate it on their own premises. Recent times have seen vast increase in portable cranes. Until the advent of steam, few of these were built. The portable jib cranes, goliaths, and overhead travellers were far outnumbered by the fixed jib cranes. Now the reverse is true.

Supersession of Hand Labour.

Mechanical lifting and transport of light articles has taken the place of a vast amount of hand labour. This change is consequent partly on the pressure of increasing competition, but is largely also due to the fact that machines are now available which were not formerly. The most striking examples occur in the light trolleys which run along on overhead tracks, and which command an entire shop area without encroaching on the floor space or occupying walls. What this means in the lessening of the amount of fetching and carrying, lifting, and adjusting is well nigh past estimation.

The Antiquity of Lifts.

Excavators at work in the Palatine Rome, have discovered beneath the foundation of the Golden House and other earlier Cæsarian dwellings certain pre-Romulan remains, including twelve ancient lifts. *Apropos* of this discovery the secretary of Messrs. R. Waygood and Co. is reported as having stated to a representative of the "Standard" that this firm's first lift was installed as recently as 1859, and that, so far as records show, the first lift in England was constructed in 1830. Now Messrs. Waygood are installing one of an average 1,500 lifts every year, an increase greatly due to the increase of high buildings in London and provincial towns. The earliest lifts were belt-driven spur-gear freight machines, and it was not until 1870 that lifts were employed for raising passengers, and these, which were mainly confined to hotels, were operated by winding drums, driven by two steam cylinders. One of the first prominent installations in this country was at the Grand Hotel, Charing Cross, opened in 1880. It was not until 1893 that Queen Victoria gave instructions for a lift to be placed in Balmoral Castle for her special use, and the lift gave such satisfaction that instructions were given for similar lifts at Osborne, Windsor, and Buckingham Palace. The first electric lift made in this country was exhibited at the Crystal Palace in 1890, and the majority of lifts now installed are driven by electricity. Some of these lifts run from 30 to 350 ft. a minute with the greatest ease and simplicity of control. In the new building of the Royal Liver Insurance Company at Liverpool there are thirteen passenger lifts, running at speeds of from 300 to 400 ft. a minute, and six ships in the Navy have been fitted with automatic electric lifts, five or six being installed in each ship.

Lifts and hoists of primitive character are, of course, of high antiquity, and traces of them may doubtless be seen in many early buildings in Britain, as, for instance, at Roslin Castle, not far from Edinburgh, where a fourteenth century lift-opening between the upper region and the underground kitchen is plainly discernible, leaving no doubt as to its purpose; and doubtless other early instances could be cited.

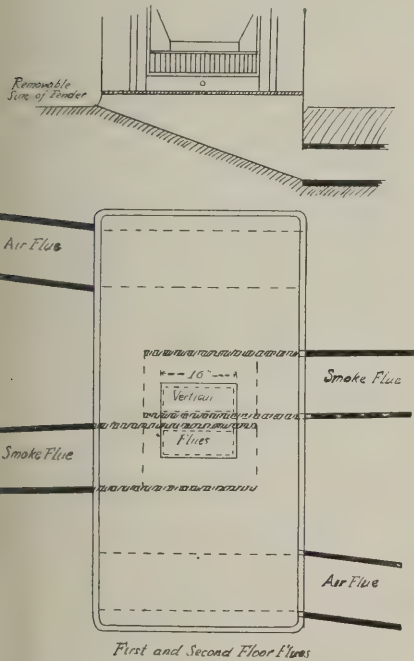
HORIZONTAL FLUES FOR WARD PAVILIONS.

We illustrate on this page the arrangement of ward flues at the new King's College Hospital.

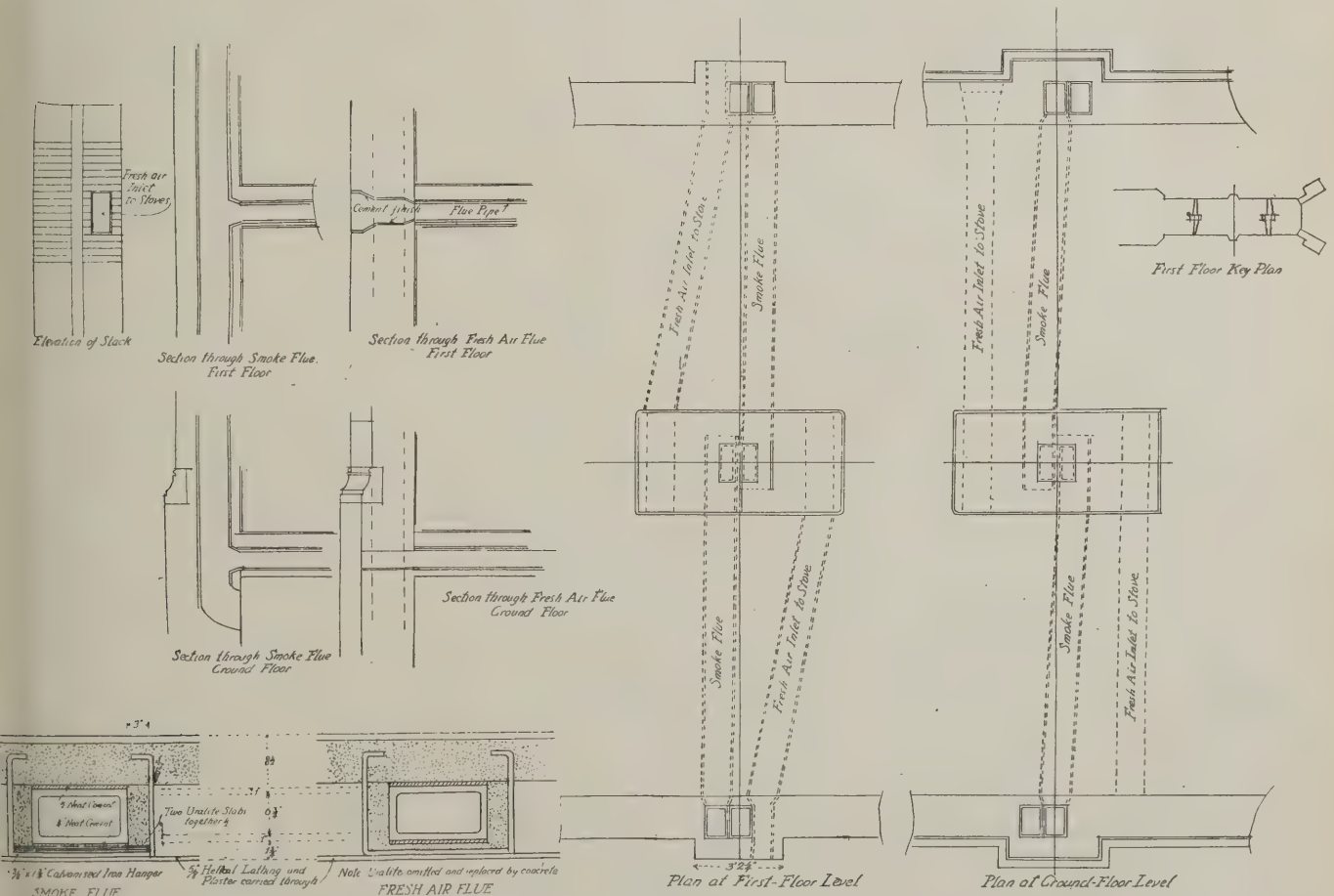
The main wards of the hospital are being heated by Messrs. Teale's "Derby conomiser" central stoves, for which horizontal flues are required. The accompanying drawings and photograph illustrate the construction of these. The smoke is conducted in the thickness of

the floor to flue stacks in the side walls, sufficient natural draught being produced by their height. Running parallel with these horizontal flues are similar ones for conducting fresh air to the stoves, their proximity to the smoke flues ensuring a suitable temperature for the fresh air introduced. The flue linings consist of rectangular-shaped fireclay pipes slung to the underside of a 6 in. solid concrete floor by means of 1 3/4 in. by 3/8 in. galvanised iron hangers. The fireclay linings are en-

cased in Portland cement concrete, and in the case of the smoke flues are insulated from the painted ceiling surface with a 1/2 in. thickness of "Uralite" sandwiched between the underside of the flue and the plaster ceiling. Access for cleaning purposes is provided, and the soot from the several floors is removed from the base of the building, the vertical smoke flues being carried down to the soot doors under the ground floor. The floor of the ward is of ferro-concrete and hollow floor tubes,



View of Underside of Ward Floor, showing Flues in position.



WARD FLUES AT THE NEW KING'S COLLEGE HOSPITAL, DENMARK HILL, LONDON, S.E.
WILLIAM A. PITE, F.R.I.B.A., ARCHITECT.

COMPETITIONS.

Proposed Kursaal, Folkestone.

The Folkestone Town Council will at its next meeting consider a report from the General Purposes Committee recommending the construction of a kursaal or band pavilion on the cliff below the Leas, between the existing shelter and Clifton Crescent. It is suggested that architects should be asked to submit designs, three premiums of 100 guineas, 50 guineas, and 25 guineas respectively to be awarded, although the Council would not bind itself to accept any design. The cost of the pavilion is not to exceed £20,000.

Municipal Offices, Padiham.

The awards in this competition are as follows: First (£40), Messrs. Pollard and Pollard, of Padiham; second, Messrs. Matthew Watson, Landless and Pierce, of Burnley. The assessor was Mr. J. S. Brodie, borough engineer of Blackpool.

New Central Schools, Beckenham.

Seventy-four designs have been submitted for the above. They will be assessed by Mr. A. W. S. Cross, V.P.R.I.B.A.

New Municipal Offices, Goole.

Mr. C. B. Flockton, the assessor in this competition, has awarded the first and second premiums (£30 and £15) to Mr. Ernest E. Fetch, A.R.I.B.A., of London, W.C. Eighty designs were submitted.

New Hospital, Easington.

The design submitted by Mr. Hugh Hedley, of Sunderland, has been selected. The building is estimated to cost about £12,000.

LIST OF COMPETITIONS OPEN.

OCTOBER 29. EXTENSION OF MUNICIPAL BUILDINGS, GLASGOW.—The corporation invite preliminary sketch designs for an extension of their municipal buildings. From the sketches submitted, the authors of not more than five designs will be selected for a final competition, at an honorarium of one hundred guineas each. Mr. John J. Burnet, LL.D., A.R.S.A., is assessor. Conditions (one guinea, returnable) from Mr. J. Lindsay, Town Clerk, City Chambers, Glasgow.

OCTOBER 31. LAYOUT SCHEME, LLANDUDNO.—Designs are invited for lay-out of about 20 acres of ground adjacent to the Happy Valley. Particulars from Clerk.

OCTOBER 31. TOWN PLANNING, HUDDERSFIELD.—The Housing and Town Planning Committee of Huddersfield Corporation offer premiums of 100, 50, and 25 guineas for laying out certain areas. Conditions (two guineas, returnable) from K. F. Campbell, M.Inst.C.E., Borough Engineer, 1, Peel Street, Huddersfield.

NOVEMBER 1. KING EDWARD MONUMENT, OTTAWA.—Sketch models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

NOVEMBER 29. BRANCH LIBRARY, LANGSIDE, GLASGOW.—Premiums £50, £30, and £25. Assessor, Mr. A. N. Paterson, A.R.S.A. Particulars from Town Clerk, City Chambers, Glasgow.

DECEMBER 1. ROYAL PALACE AND LAW COURTS, BULGARIA.—Architects desiring to take part in this competition should communicate with the Commercial Intelligence Branch of the Board of Trade, Basinghall Street, E.C.

DECEMBER 2. SCHOOL BUILDINGS, CARLISLE.—Particulars, City Surveyor, Carlisle.

MARCH 1, 1913. MUNICIPAL BUILDINGS, RANGOON.—The committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars £1 (returnable) may be obtained from the London Agents, Messrs. Ogilvy, Gillanders, and Co., Sun Court, 67, Cornhill, E.C.

OBITUARY.

Mr. Francis Masey, F.R.I.B.A.

Mr. Francis Edward Masey, F.R.I.B.A., who died in September, after an illness extending over a fortnight, had been for fourteen years a recognised leader in his profession in South Africa. When he was taken ill it was hoped and believed that his recovery would be only a matter of a few days, but complications set in, and Mr. Masey died in a nursing home at Salisbury, Rhodesia.

Francis Edward Masey was the third son of the late Mr. Philip E. Masey, architect, of London. He was educated at the Royal Academy Schools, London, and became a pupil of the late Mr. Alfred Waterhouse, R.A., in 1878, with whom he remained for fifteen years. He subsequently assisted in carrying out many of Mr. Waterhouse's later works. In 1887 Mr. Masey was awarded the Soane Medallion Scholarship of the R.I.B.A. He also gained silver medals in the Tite and Owen-Jones competitions. In 1896 he went to South Africa, where one of his first commissions was the post-office at Port Elizabeth. Entering into partnership with Mr. Herbert Baker in 1897, Mr. Masey was (says a writer in the "Rhodesia Herald") jointly responsible with that gentleman for the following works: The recently unveiled Rhodes Memorial at Groote Schuur, Rhodes Building, the new St. George's Cathedral in Cape Town, the laboratories of the South African College, the Cape Town offices of the National Mutual Life Assurance of Australia, the South African Association offices, the Cape Town City Club, the new Union Parliament Buildings in Cape Town, and numerous churches and private residences in the Peninsula, including the new Dale College Buildings in King William's Town and the Mother Cecile Memorial Hall at Graham's Town. The partnership was dissolved in 1910, when Mr. Masey took up work in Rhodesia. Among the works he has executed are the Salisbury Club, the residence of Mr. Julius Weil, the new St. John's Church at Bulawayo, educational buildings for the Beit Trustees at Bulawayo and Salisbury, new Museum at Bulawayo, new premises for the Salisbury Board of Executors, and the new offices of the Goldfields Rhodesian Development Company, Ltd., Salisbury, now in the course of erection. Mr. Masey was a valued member of the Rhodesian Scientific Association.

Mr. George Friend.

Mr. George Friend, architect, of Earl Street, Maidstone, died on August 21st, leaving £21,376.

Mr. James Parker.

Mr. James Parker, the antiquary, of The Turl, Oxford, died suddenly in London on October 10th. He travelled to London the day before, and at that time there was nothing to indicate that he was otherwise than in his general health, although it was known that for two years he had suffered from a weak heart. Mr. Parker, who

was born in 1833, was the son of Mr. John Henry Parker, C.B., who was also a famous antiquary and a member of a family claiming direct descent from Samuel Parker, Bishop of Oxford in the reign of James II. He was educated at Winchester, and received the honorary degree of M.A. at Oxford in 1877. He was one of the most kindly and genial men, and was never happier than when helping in literary work. Mr. Parker was for many years the mainstay of the Oxford Architectural and Historical Society, in which he held various positions. He possessed a mine of information concerning the early history of the society, which may be regarded as the history of the Gothic revival in England. One of Mr. Parker's best known works was the "Early History of Oxford," published in 1884. He was also the author of the "A B C of Gothic Architecture," and the introduction to "Gothic Architecture," which have passed through many editions. When the Professor Freeman was writing the history of the Norman Conquest Mr. Parker travelled with him in Normandy, and on many points Professor Freeman's views were modified by the help of Mr. Parker's independent conclusions. A geological scholar, he possessed a remarkable collection of local fossils, and contributed many papers to the Geological Society.

Mr. Benjamin Morton.

Mr. Benjamin Morton, of Aldern House, Bakewell, Derbyshire, builder, who died on May 13th, aged seventy-three, left an estate of the gross value of £78,180, of which £32,431 is net personality.

IN PARLIAMENT.

(By Our Press Gallery Representative.)

Captain Cook Statue.

In the House of Commons, Mr. King asked Mr. Wedgwood Benn as representing the First Commissioner of Works, if he would say when it was intended to erect the statue of Captain Cook; and whether it was intended to erect it on the eastern side of the Admiralty Arch.

Mr. Wedgwood Benn replied that it was anticipated that the statue would be erected in the course of next year. The statue would be placed on the west side of the Admiralty Arch.

Ventilation of the House.

Sir J. D. Rees asked Mr. Wedgwood Benn whether the Commissioner of Works had read the address of Mr. Leonard Hill, as president of the physiological section of the British Association in which he explained how deadly was unformly heated air, how necessary perceptible movement and change of temperature, how injurious were the effects of a still, close, equable atmosphere; and whether he would take steps to alter the present system of ventilation of the House, so as to bring it more into accord with these sanitary principles.

Mr. Wedgwood Benn said the ventilation of the Chamber had been the subject of several inquiries by Committee between 1902 and 1906. Over £5,000 had been spent in carrying out the recommendations of those Committees and the reports of Dr. Mervyn Gordon. The air in the Chamber was constantly in movement and was changed about six times a hour. A uniform temperature was maintained. The First Commissioner of Works was not of opinion that any alteration in the system would be desirable.

NEWS ITEMS.

A One-Floor School Building.

A new school that has been erected at Green, at a cost of nearly £10,000, one-floor building, in accordance with latest idea of school-planning, and is of the first examples of its kind in this country.

The Dee Bridge at Chester.

This bridge, built in 1280, was recently found to be in a dangerous state. Sir Francis Fox, who was consulted, reported that if it were not strengthened, it would cease, the scouring effect of the water running produced great cavities in the masonry. Under Sir Francis Fox's advice, repairs are being made.

Town-Planning at Dunfermline.

The Town-Planning Committee of Dunfermline Town Council at a meeting held last week had under discussion the main scheme of the city extension scheme—namely, the new road, which will be 130 ft. wide, and will connect the city with the docks of Rosyth Naval Base. In the new scheme a double line of tramways is to be introduced.

Sheffield Town Hall Extension.

Early in the New Year building operations in connection with the £50,000 scheme for the extension of the Sheffield Town Hall will be started. The plans have been passed, and it is understood that there is a desire to expedite the work as much as possible. The scheme is to complete that corner of the square which is bounded by Norfolk Street and Cheney Row. Certain modifications by the City Engineer, it carries out the Renaissance style of the main building.

Waterproofing Compounds.

The heavy rains experienced during August and September have resulted in the flooding of basements, cellars, and pits, and stoke-holes. Architects and builders everywhere are being asked to provide a remedy for these conditions, and therefore, it has been suggested to put in a favourable position for trying one of the damp-proofing preparations which have been described and advertised in this journal. Certainly it is a timely reminder.

Progress at Liverpool Cathedral.

At a meeting of the Liverpool Cathedral Committee last week it was decided to proceed with the building of the first of the transepts at a cost of £79,000. This work will be completed about three years hence, and the transept will be consecrated at the same time as the chancel. The committee will undertake the further responsibility of raising £65,000 within the next five years. A letter was read from Mrs. Barrow making a further gift of £2,000 towards the organ. Mrs. Barrow's total contribution to the cost of the organ now stands at £17,000.

Brighton Memorial to King Edward.

The King Edward Memorial at Brighton, which was unveiled last Saturday by the Duke of Norfolk, Lord-Lieutenant of the County, has been erected on a dividing line of Brighton and Hove on the sea front. The monument is 27 ft. high and depicts a winged figure of "Peace" in bronze presiding over the universe, which is represented by the globe on which she sits. Under the globe there is an inscription of the waters under the earth, and dolphins which support the globe representing the fishes that are in the waters.

In the uplifted right hand the figure holds an olive branch, and in the other an emblem of eternity. The whole stands on a square pedestal of Stancliffe stone, on the four faces of which are bronze panels. The front one bears a relief portrait of the King, the side ones the coats of arms of Brighton and Hove respectively, while the one at the back contains an inscription relating to the monument.

New Buildings at Queens' College, Cambridge.

At Queens' College, Cambridge, last week, the Bishop of Ely dedicated a block of new buildings which have been erected on the site of the old almshouses founded by the first president of the college, Andrew Dokett (1448-1484). The new buildings, which will provide accommodation for 26 undergraduates, as well as the bursar's rooms, a guest-room, and clerk's offices, are to be known as Dokett's Buildings. Mr. Cecil G. Hare, London, was the architect, and the builders were Messrs. Rattee and Kett, of Cambridge.

An Architectural Opportunity.

The old King's College Hospital in Carey Street, W.C., is to be sold by tender in December, consequent on the hospital having been transferred to Denmark Hill. It cannot be claimed that the old building has either architectural pretensions or historic interest. It was built no longer ago than 1853, on the site of the old Grange Inn, which was much patronised in its day by the actors of the Duke's Theatre near by. There was a previous King's College Hospital in Carey Street in 1839. If no adequate tender be made in December a lease for ninety-nine years will be offered, conditionally on £100,000 being spent on new buildings. Here, therefore, is a further opportunity for adding to London's architectural dignity.

Restored Mosaics in St. Mark's.

At St. Mark's, Venice, another very important work of restoration has just been finished—that of the dome of the Madonna, above the Lady Altar. On the inside of the dome is delineated the life of St. John in mosaic—among the finest Byzantine works of the thirteenth century. Engineer Marangoni, director of the work of restoration, has accomplished successfully a very difficult task in detaching the mosaics and then replacing them after the restoration had been completed, so that no one would suspect that they had ever been touched. Indeed, the mosaics, which before had been obscured by the greasy smoke of wax candles and lamps, are now seen in all their magnificence.

Middlesex Memorial to King Edward.

At a meeting of the committee of the Middlesex Memorial to King Edward VII., held last week at Caxton Hall, Westminster, the Duke of Bedford, Lord-Lieutenant of the County, presiding, the accounts showed that the receipts to September 25 last amounted to £4,787 10s. 8d., and that a balance of £4,562 3s. 11d. was available. The special sub-committee appointed to consider the selection of a sculptor to execute the proposed bust of King Edward reported that the sub-committee had inspected the work of nine different sculptors who, in some form or other, had all executed likenesses in marble of the late King. As a result of their inspection they recommended that the work of the proposed memorial be entrusted to Mr. P. Bryant Baker, of Fulham Road, Chelsea. Mr. Baker had agreed to execute the bust in white marble, and of heroic size, at a

cost of 350 guineas. The bust will be placed in the entrance hall of the Middlesex County Hall, which is being erected at Westminster.

The Old G.P.O. Façade.

Now that the house-breakers are on the point of demolishing the great Classic façade which Sir Robert Smirke built for the G.P.O. in St. Martin's-le-Grand, the question is being seriously asked: Cannot something be done to save the façade for the nation? About £9,000 would be needed to effect the removal of the 8,000 tons of masonry and set it up again at some other spot. Some of the suggestions which have been made are that it should serve as the frontage of (1) a National Gallery of Sculpture on the new Embankment between Lambeth Bridge and the Houses of Parliament, (2) a new home for the London Museum now inadequately housed at Kensington Palace, (3) a public shelter in the new King Edward Memorial Park at Shadwell. Sir Robert Smirke was also the designer of the Bank and the British Museum, and the façade deserves a better fate than to be broken up.

Arts and Crafts Exhibition Society.

This society, founded in 1888—the original users, though not patentees, of a title since in very general use—will hold their tenth exhibition at the new Grosvenor Gallery, at 51a, New Bond Street, during the months of November, December, and January next. The society has held triennial exhibitions since the year 1900, and it claims to be the only one which endeavours to raise a standard of design and workmanship in all kinds of decorative art, and the only open exhibition for craftsmen and designers in the arts. These exhibitions have never been run for profit, the society being satisfied if its expenses are paid, as the main object is to find opportunities of placing the best English contemporary work in design and craftsmanship before the public. Mr. Walter Crane is the president, Mr. Edward S. Prior hon. secretary, and Mr. C. H. St. J. Hornby hon. treasurer.

Oak Carving at St. Paul's Cathedral.

The question of presenting to the South Kensington Museum some oak carving at present in St. Paul's Cathedral has been, it is understood, under the consideration of the authorities of both the cathedral and the museum. For a long time a quantity of beautiful oak carving, much of it thought to be the work of Grinling Gibbons, has been stored in various parts of the cathedral, notably in the room known as the Oak Room, above the choir level. These fragments, for they are nothing more, reveal the full delicacy and beauty of the work which is seen in its complete perfection in the choir stalls, and the cathedral and the museum authorities have discussed whether it might not be possible to find the requisite material for reconstructing a choir stall with a view to its being placed in the South Kensington Museum. No idea of interfering with any woodwork which is in position has ever been suggested or would be for an instant entertained. Where it has hitherto lain the woodwork has been practically lost to the public, liable to deterioration and a possible source of danger from fire. From an instructional point of view, for the carver and other craftsmen, as well as from the point of view of artistic enjoyment, there is, it is felt, much to be said for removing the oak to South Kensington instead of allowing it to repose any longer in out-of-the-way corners of the cathedral.

TRADE AND CRAFT.

"Angold" Magazine Flame Arc Lamps.

In a lamp for the lighting of streets and open spaces, or for the cognate service of shop-lighting, the most important qualities, after efficiency, are long duration of light, low carbon cost, low maintenance expenses, and easy trimming. These qualities the "Angold" magazine flame arc lamp was designed to provide. The "Angold" was first introduced commercially about six years ago, and from time to time it has been improved in accordance with the experience gained in practical lighting, and the lamp now sold may therefore be regarded as the perfected product of years of practical experiment. The leading principle of the lamp is the assemblage of a certain number of carbons—nine or ten pairs—into two magazines, one for the positives and the other for the negatives, one pair of carbons burning at a time. These carbons are so arranged that as soon as one pair is consumed the next pair comes into operation. The positive carbons cannot be put into the negative magazine, and when the last carbons are consumed the feeding gear is automatically put out of action. The carbons, which are comparatively short, ensure the maximum of burning hours, because they are used up to the smallest stumps. The lamp is made of several types, which may be subdivided into two classes according to burning hours: (1) those using 12-in. carbons, and (2) those using 15-in. carbons; (1) being made for 7, 8, or 10 ampères, and (2) for 8 or 10 ampères. Four standard patterns are stocked. The lamp is described and illustrated in "G.E.C. Bulletin No. 6," which, in its clearness of expression and its minute attention to detail, is one of the most satisfactory trade booklets we have ever seen. It includes a number of interesting views showing typical installations of "Angold" magazine flame arc lamps. It is issued by the General Electric Co., Ltd., 67, Queen Victoria Street, E.C.

Rainwater, Soil Goods, and Sanitary Castings.

A catalogue relating to rainwater, soil goods, and sanitary castings that has just been issued by the Carron Company, Stirlingshire, comprises hundreds of illustrations, representing many patterns and probably every detail of the pipes, connections, and accessories used in the service indicated, as well as certain items, such as roof-lights and cistern brackets, that the title of this exceedingly useful booklet hardly seems to cover. Sizes and prices are fully listed, and the catalogue is at once concise and comprehensive. Some of the registered designs of rainwater heads are notably elegant, and there is a very wide range of gutter mouldings, as well as a wide choice in the ornamentation of pipe bands or ears. The instructions for ordering embody many valuable hints as to choice and procedure.

"Perfect" Heating and Ventilating Installation.

To the United Service Club, Pall Mall, S.W., originally designed by Sir Charles Barry, a large addition has just been made, the whole of the heating, ventilating, hot water supply, and cooking apparatus being in the hands of Messrs. Benham and Sons, Ltd., under Messrs. Thompson and Walford, architects, and Messrs. Kirkland and Capper, consulting engineers. Messrs. Benham's "Perfect" accelerators are being used on the heating apparatus. Messrs. Benham and

Sons are now carrying out installations of the "Perfect" system of hot water heating at the following places: Hydro Hotel, Eastbourne. (J. W. Woolnough, architect); offices, 31 and 33, Lime Street, Holborn, E.C. (Fair and Myer, architects); Messrs. Jugens' premises, Snow Hill, E.C. (Herbert Knight, architect); Avington Park, Alresford (Millar and Cox, architects); the Gate of St. John, Ryde (Albury, Rising and Morgan, architects); All Saints' Church, Goodmayes (P. K. Allen, architect); Minerva Building, Tottenham Court Road (George Vernon, architect).

A New Valveless Gas Engine.

Builders and contractors find so many uses for that handiest source of power, the gas-engine, that a short account of an important development in this direction possesses for them a very practical interest. The engine was described by Mr. A. E. L. Chorlton, at a meeting of the Iron and Steel Institute on October 2. Messrs. Mather and Platt, Ltd., have produced a new design of vertical gas engine, and now have five such engines in successful operation. It is believed by those who have seen these engines at work that the new design possesses features destined largely to extend the application of gas power. The new engine is described as a beautiful example of mechanical design, possessing unique features in regard to simplicity and facility for overhaul, and solving the problem of designing a high-power vertical gas engine without excessive multiplication of parts.

The two-stroke cycle, with every stroke a driving stroke, and with the exhaust ports formed centrally in the cylinder walls, and opened and closed by the working piston, is now well understood, and is so entirely satisfactory in operation, that the idea occurred to Mr. Chorlton, the inventor of the engine under notice, of using the same principle for controlling also the charge inlet.

Some of the important advantages arising out of this design have been thus indicated: (1) Every stroke being a driving stroke, therefore the engine is both smaller and less costly than any other of equal rating. It is anticipated that this design will place the gas engine on an equal footing with the steam engine in regard to capital cost per unit of power. (2) The cylinders are castings of the simplest outline and character, mounted bodily within a casing which forms the water jacket. They are quite free from intricate passages, thick flanges, or ribbing, such as introduce internal foundry stresses, and being symmetrically heated and cooled during working, it is confidently anticipated that they will relegate that bugbear of the gas-engine maker—cylinder cranks—to ancient history. (3) There is not a valve of the mushroom type on any part of the engine. Messrs. Mather and Platt's previous experience of the utilisation of the working pistons as exhaust valves gives them confidence that the same principle will be equally satisfactory in regard to inlet. The sleeve-valve controlling the gas and air charges deals with these in cool condition, and, even if the worst happens, that is to say, if they occasionally have to run on tarry gas, less trouble is anticipated than with earlier arrangements.

The firm propose to manufacture the duplex engines in powers up to 4,000 b.h.p., and higher should the necessity arise. They will be designed to run at fairly high speeds, and will thus be applicable to all duties for which vertical steam-engines are now used.

PROFESSOR DICKIE ON
ARCHITECTURAL THOUGHT.

At the Manchester University last week Professor Dickie, who has just been appointed to the chair of architecture delivered his first lecture. Sir Alfred Hopkinson, who presided, gave him a hearty welcome to the University and city. Speaking of the work of the session, the Vice-Chancellor said that special attention would be given to the subject of architectural design, and at Professor Dickie's instance a slight change had been made in the arrangements so that students would be able to take the whole of at least one day in the week for design at the Manchester Municipal School of Art. Two short special courses had been arranged. Mr. Phythian would give a course of lectures on painting—especially Italian painting, including mosaics and frescoes—in relation to architecture, and in the Lent term Mr. W. H. Ward would give a course on Renaissance architecture. Both courses would be of interest not only to students of architecture, but also to those who took an interest in Italian art and in the historical point of view.

Professor Dickie, in the course of an address on impressions occurring in the presentation of architectural thought, said the deplorable condition of the public mind towards architecture was frequently discussed, and it was encouraging to find in certain quarters a steadily increasing interest, especially in domestic work, in which it was hoped would develop into more than individual movement. A knowledge of architecture was not easily attained, and the criticism of the public must always be confined within indefinable limits which could only expand the architecture with which it was surrounded increased in truth and beauty.

Architects frequently said that they must educate the public before they could have good architecture; it would be nearer the mark to say that they must have good architecture before they could educate the public. Speaking more particularly of church building, Professor Dickie said the Gothic style appeared as the result of an architectural eruption from the crater of human expression which burst upon the world from nowhere. Religious enthusiasm reared in a day such a forest of offerings to high heaven that there was no period in history which could compare in the volume and tension of its abandonment to building. The divine fire was in all men, and it burnt in all their works. In these days Christianity had become more closely wedded to charity; offerings took a more practical form, and, much as it might move their artistic soul to sorrow, they must, he feared, seek other sources of inspiration in architecture. Churches were built, but they arose out of less mystery and romance. Their beauty was intended more to satisfy man than to appease God. Church building had become more a matter of business considerations; committees discussed the cost at so much per seat, while architects in competition strove to supply the article at that much. And people asked why was it that our modern Gothic lacked the spirit of the old. It would be a miracle if it did not. But, as architects, they had a great inheritance, and to those who had souls to stir these monuments of ecstasy would ever remain as an inspiration and as manifestations of the heights to which high ideals could raise both man and his work.

Professor Tout moved and Mr. Garnett seconded a vote of thanks to Professor Dickie.

SOCIETIES AND INSTITUTIONS.

ARCHITECTURAL ASSOCIATION.

*Presidential Address by Gerald C.
Horsley, F.R.I.B.A.*

Mr. Gerald C. Horsley, F.R.I.B.A., on assuming his second year of office as President of the Architectural Association, made as the subject of his address "The Training Afforded by the Architectural Association and Its Value in Promoting Progress of Knowledge in Architecture."

Founded over sixty years ago by a few earnest men to fill a blank in their artistic education, he said, the society has consistently advanced along the path of progress and development. It began as a society founded by architects for architects, to assist them in acquiring a fuller and more complete knowledge of their art, and it is now managed by architects for the same excellent object.

In its development in its work which the Association and those most interested in it have to be one of no little importance. The institution of a third year in the day school course in the School of Architecture. Hitherto the two years spent in day school have been chiefly of use to the student as an introduction to the art of architecture. They prepared the way for the more advanced study in the evening school in the third and fourth years. In the future the first two years will still perform these preparatory functions, and in the cases where a student cannot attend the third year in the day school he will be able, as heretofore, to complete his course and obtain his certificate in the evening school in his fourth year. But to those students who take advantage of the new provision he believed that time will prove to be of great benefit. First, because, as good workers, they will be able to obtain their certificates in three years instead of in four; and, secondly, because they will be far better equipped for the work which will fall to their share on entering, as pupils or assistants, an architect's office. Here we come to a very important reason for the institution of this *régime*. The complaint has been not infrequently made in the past that the two years' course was not a period of sufficient length to properly equip a man for work in an office; to meet this complaint the third year has been instituted.

Under the able direction of Mr. Robert Watson the all-important subject of development will be carefully studied, and it is the opinion of the Council that the probationary period must be of the utmost advantage to the day school students.

Common with every member he would deeply deplore this development if it felt it would have any deterrent effect on the custom of entering an office as an articled pupil after the course has been completed and the certificate obtained. He did not believe that it would have this effect. The day school course has been continued longer in order that the student may be better fitted to enter an architect's office. This development was quite inevitable. In view of the careful preparation for his work with which it is now necessary to provide the architectural student the period of study must be lengthened. In common, then, with the Council and with the Advisory Council, who have been concerned upon this important step, they might look forward with confidence and interest to its success; all the more so because still further development is closely connected with this three years' course.

This is that the student should enter the Royal Academy School for training upon its termination and during the time he is at work in an architect's office. The authorities of the Royal Academy have agreed to admit to their school without the usual examination, except in the subject of design, any of the students who have obtained their certificates after the day school course.

Among the advantages offered to a student by the Royal Academy are the prizes which can be gained for good work. These are of great value. The principal of them is the Gold Medal and Travelling Studentship for one year's study abroad, of the value of £200, which is offered for competition every two years.

But the provision for the equipment of our architects of the future is not yet finished. The foundation of studentships at the School at Rome is now an accomplished fact. No doubt the number of studentships compared with the number of competitors will be few, but, nevertheless, the institution of this important competition will tend to make the whole scheme of architectural education in this country more thorough. For although all competitors cannot be winners of prizes, all may be inspired to do good work.

In order to increase the efficient working of their educational system, they have created a new post, viz., that of the Registrar. The Registrar may be called the secretary of the school, and Mr. Scott-Holmes, who has been appointed to fill this position, brings to it just those qualities which are desired.

In considering the progress which the Association has made during the past year he could not but pause for a moment to remember the sad loss which was suffered so very suddenly last autumn, in the death of Mr. D. G. Driver, who for so many years had worked with so much energy and enthusiasm in the interests of the society as its secretary. The response to the appeal issued by the hon. treasurer has enabled the trustees to come forward and make such arrangements as will best help Mr. Driver's widow and young children. In the death also a few months ago of Mr. T. M. Rickman, F.S.A., the association lost their senior member and past-president. Mr. Rickman was elected a member of the A.A. in the year 1852. He was therefore one of its founders, and was president in the year 1854-1855.

"My reason for devoting, however inadequately, this paper chiefly to the work in the School of Architecture is twofold—first, to point out the new development of our system; secondly, to remind ourselves of the real purpose underlying all our efforts, namely, to help forward the course of our art, and to hand on the torch, as M. Gaudet has said, to our successors."

SHEFFIELD SOCIETY OF
ARCHITECTS.*Provincial Societies and the R.I.B.A.*

The opening meeting of the Sheffield Society of Architects and Surveyors was held at the University of Sheffield on October 10th. The President, Mr. J. B. Mitchell-Withers, alluded to the inadequate representation of provincial societies on the Council of the Royal Institute, and other speakers dealt with the decrease in the number of students entering the profession.

The President in his inaugural address first referred to the pleasure he had derived from being during the past year the representative of the Sheffield Society on

the Royal Institute Council. From what he had seen and heard, the metropolitan architects attached great importance to the views of the provinces expressed by the allied societies. There appeared, however, at present to be no adequate means of effectually expressing the opinions of the provincial members as a whole. If it were possible to have more inter-communication between the provincial societies, and to obtain a greater and more permanent representation of provincial men on the Institute Council, that would tend to the benefit of the profession as a whole. It was the concentrated and combined opinion, after an interchange of views between allied societies, that was needed to be of value and to carry any weight.

He saw that some of their younger members were associating themselves together this session with the object of having lectures of their own. He wished them every success, and hoped the scheme would be well supported. One of the most valuable acquirements that could be cultivated in early life was the art of teaching oneself. It helped the student to profit more from the teaching which he received from others, and increased the faculty of discriminating in the choice of that which should be vividly impressed on the memory for future use. He advised them to adopt method in all things, and not to get into the habit of putting off until to-morrow those things which were disagreeable. In studying the life-history of various architects, he was struck with the fact that their success depended largely on the habits and methods they had formed when young, and which they were able to apply satisfactorily when the call to real work came.

Mr. A. F. Watson, in moving thanks to the president for his address, agreed that it was a pity that more members of the allied societies had not the opportunity of being elected on the Royal Institute Council.

Mr. E. M. Gibbs, who seconded, thought when the Institute were reconsidering their charter the provinces should ask for larger representation. At present Sheffield could only be represented about once in three or four years, and that was a very small share of representation for a society like theirs. He did not see why the London people should rule the roost, and in many cases, he regretted to say, misrule it. Another matter mentioned by Mr. Gibbs was the remarkable scarcity of young men entering their profession. Whether they had got the reputation of being a hard-worked and poorly paid profession he could not say. He supposed that must be it, for many of the young men of to-day wanted to be well paid and do little work. But it was certainly strange that so few were entering the profession, and that there was such a small number of students in the Department of Architecture at the University. It was certainly not the fault of the lecturer, but if the young men would not come forward they could not send them to the University. It was rather a pity that they had not better support for such an excellently equipped department.

The President, in his reply, thought there were a great many more architects to-day than in times gone by in proportion to the population, and unless in some way the work increased it was possible that there would be less pay. They must also remember that a great deal of important work was now undertaken by public

bodies, he believed at much greater cost than formerly. He did not say that was so in Sheffield, but it certainly was in some places, and probably the fact that a great deal of the work which was prepared was never carried out accounted for some of this extra cost.

GLOUCESTERSHIRE ARCHITECTURAL ASSOCIATION.

Mr. J. A. Gotch on Elizabethan Architecture.

Mr. J. A. Gotch, F.S.A., F.R.I.B.A., lectured last week at Northgate Mansions to the Gloucestershire Architectural Association upon "The Homes of Queen Elizabeth's Courtiers." The president of the Association (Mr. Walter B. Wood, A.R.I.B.A.) occupied the chair.

Mr. Gotch, who illustrated his lecture with a great number of beautiful lantern slides of typical examples, said that under the safe and sound rule of Elizabeth at a time when the dissolution of the monasteries had placed much wealth in certain secular quarters, there was a great zest for building. The ponderous contrivances for ensuring safety gave place before the fulfilment of a desire for better and more comfortable homes. This busy building period lasted for about sixty years, throughout the reigns of Elizabeth and James I. Before it there had been the Tudor period still distinctly Gothic, and after it came a period distinctly classic. The Elizabethan period had a distinct individuality. The culture of Italy at the time had affected the whole civilised world, and Elizabethan architecture was marked by many Italian features applied very largely to the Gothic forms, which had clung to English architects from their youth; the whole developed with certain distinct characteristics, in accordance with the demands of English climatic and other conditions. From whatever source these characteristics came, they were developed upon a body entirely English, namely, the plan. The buildings had to coincide with the established requirements and customs of English life, and they were built so as to fulfil the great desire for magnificence, for more privacy, and for more light. The great size of the buildings made them so magnificent that in many cases they were far beyond the resources of modern incomes, and many descendants of the Elizabethan courtiers had had, perforce, to leave the tremendous homes of their ancestors; privacy was gained by a large addition to the number of rooms built into the mansions; and light had been supplied by a larger number of windows more conveniently placed. Indeed, such a change in the latter respect did this Elizabethan style bring into vogue that Lord Bacon recorded that "One could not tell where to become to be out of wind or sunlight." Among the interesting examples of the period which Mr. Gotch showed were several buildings geometrically planned—strictly square, oblong, or triangle—after a fanciful manner which has given place in our time to strict utility.

SOCIETY OF ENGINEERS.

Town-Planning from an Engineering Aspect.

Mr. Ernest R. Matthews, Assoc. M.Inst. C.E., F.G.S., in a paper on this subject read before the Society of Engineers on October 7th, divided his matter under two main headings: (a) Town planning in a residential district and (b) Town planning in a manufacturing area. He illustrated the former by a brief description of Brid-

lington's town planning scheme, and stated that one of the principal points to be considered in the preparation of a scheme was the direction, width, method of construction of main arterial, secondary, and subsidiary streets. He suggested that these should be 75 ft., 50 ft., and 28 or 30 ft. in width respectively, that they should be constructed of tar macadam with grass margins, asphalted roadways, and trees, and that the buildings should be set back 25 ft. in the 75 ft. and 50 ft. streets, and 20 ft. in the subsidiary streets. He gave a description of the method of construction that he would recommend for the foundation of the streets and for the tar macadam roadway. The author did not agree with the idea of making the foundation of the roadway in a subsidiary street less substantial than that in a wider street. He deprecated the practice of putting in heavy kerbing and flagged footways in residential districts, and thought that grass margins with asphalted footways not only effected a saving in cost, but presented a more rural and pleasing appearance. He thought that the road requirements of our by-laws were unreasonable and resulted in houses being built with a narrow frontage and deep back, instead of a wider frontage and shallow back, which he considered far preferable.

In designing a town planning scheme it would sometimes be found necessary to allow for the widening of some of the existing roads, and also for the diversion of certain public footpaths; this had been so at Bridlington. Open spaces should be left for parks, tennis-courts, bowling-green, children's playground, garden enclosures, sites for public buildings, etc.

The sewerage and sewage disposal of the area were matters of great importance, and the engineer must ascertain if the existing sewers and disposal works were capable of taking the drainage from the proposed area, also whether the levels permitted the area to be drained into the existing sewers, and he must devise a scheme for dealing with the storm water. The lighting of the area by means of gas or electric light was also a matter of great importance, as was that of water supply.

Town planning in a manufacturing area was very different from that of a residential area, and the points which must be considered include: (1) The position of the proposed industrial area. (2) Its proximity to railway sidings. (3) The facilities for vehicular traffic to and from this area. (4) The necessity for constructing any new roads leading to this area in a substantial manner, so that they would carry the heavy traffic likely to come upon them. (4A) The provision of roads for rapid and slow traffic. (5) The area to be occupied by workmen's dwellings. (6) The supply of electrical energy for power and lighting purposes. (7) The position for wharfage if water carriage is available. (8) Supply of water and gas. (9) Sewerage and sewage disposal. (10) Disposal of storm water. (11) Size of area. (12) Direction of prevailing winds. (13) Advisability of constructing subways under the main arterial roads. Several other points were of equally great importance from the engineer's point of view.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

A council meeting of the Royal Institute of the Architects of Ireland was held at 31, South Frederick Street, Dublin, last week, the President, Mr. A. E. Murray,

R.H.A., F.R.I.B.A., in the chair. A large amount of correspondence was dealt with, including letters from the Nottingham Architectural Society, the Master Builders' Association, and the Surveyors' Institute on the Insurance Act. Several names in connection with the election of hon. secretary and hon. treasurer were considered by the council.

COMING EVENTS.

Saturday, October 19.
Institution of Municipal Engineers.—Meeting at Harrogate.

Monday, October 21.
Institute of Sanitary Engineers.—Mr. Percy L. Marks on "The Hygiene of Buildings," Caxton Hall, Westminster, at 8 p.m.

Wednesday, October 23.
Manchester Society of Architects.—Paper by Mr. Halsey Ricardo, F.R.I.B.A.

Thursday, October 24.
Sheffield Society of Architects and Surveyors.—Mr. F. Radcliff on "The Use and Misuse of Materials." (Students' Meeting.)

Friday, October 25.
Birmingham Architectural Association.—Smoking Concert and Exhibition of Drawings.

Saturday, October 26.
Royal Sanitary Institute.—Provincial Sessional Meeting at Alton.

Monday, October 28.
Architectural Association.—Mr. Lawrence Weaver, Hon. A.R.I.B.A., on "Some Country Houses of To-Day," at 8 p.m.

Friday, November 1.
Birmingham Architectural Association.—Mr. George H. Oatley, F.R.I.B.A., on "Fountains Abbey."

Monday, November 4.
Royal Institute of British Architects.—Presidential Address by Professor Reginald Blomfield, A.R.A., at 8 p.m.

Monday, November 11.
Architectural Association.—Mr. John A. Marshall on "Marbles Used in Greek, Roman, and Byzantine Buildings," at 8 p.m.

Bristol Society of Architects.—Mr. Graham C. Awdry, F.R.I.B.A., on "Some Practical Remarks to Pupils, Assistants, and Young Architects."

Wednesday, November 13.
Manchester Society of Architects.—Paper by Mr. J. H. Worthington, M.A., A.R.I.B.A.

Thursday, November 14.
Sheffield Society of Architects and Surveyors.—Mr. F. H. Wrench, A.M.I.C.E., on "Some Notes on Surveying."

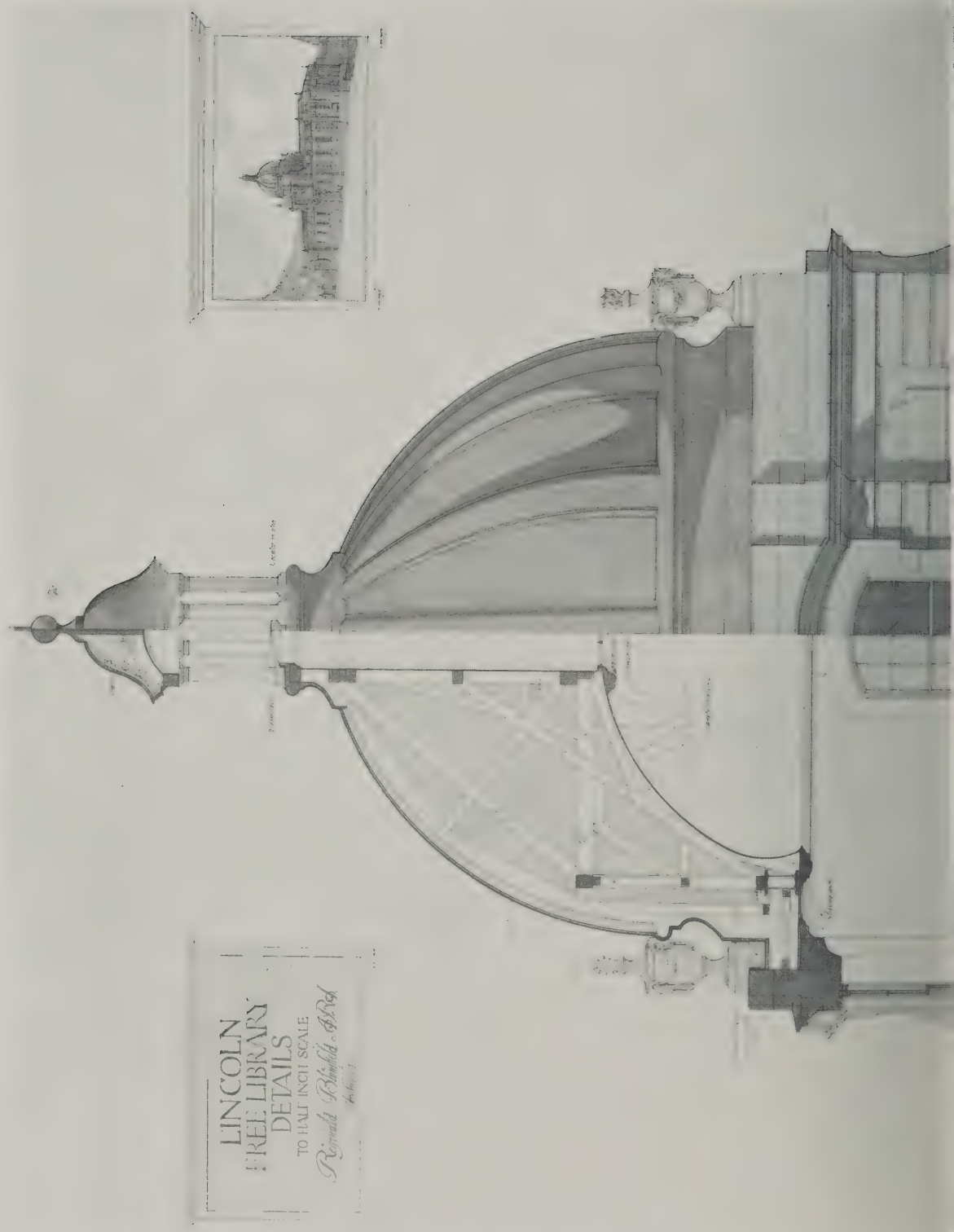
Concrete Institute.—Presidential Address by Mr. E. P. Wells, at 7.30 p.m.

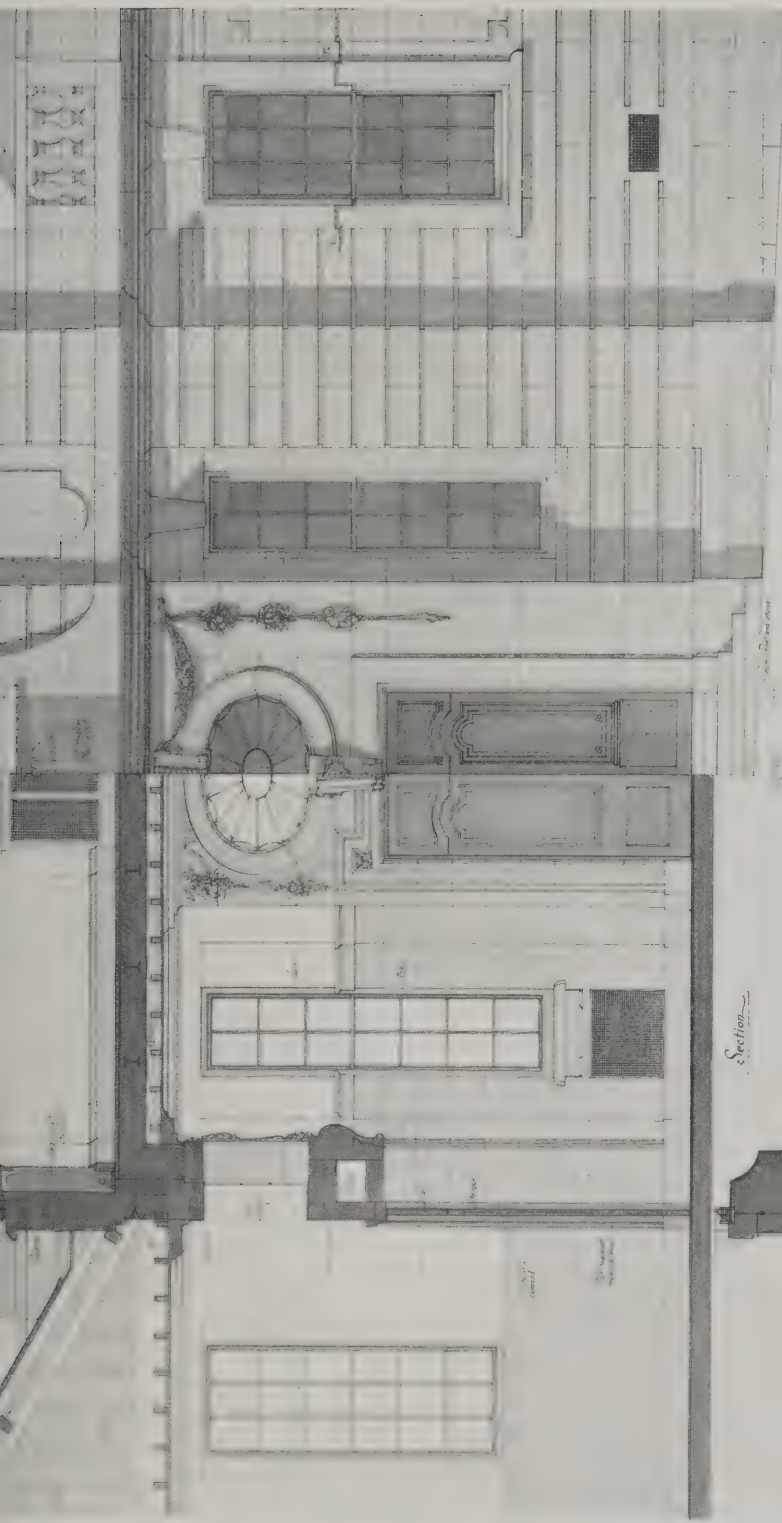
Friday, November 15.
Birmingham Architectural Association.—Mr. F. Dare Clapham, F.R.I.B.A., on "Some Notes on Lancaster Tower Hall."

Monday, November 18.
Royal Institute of British Architects.—Mr. J. L. Ball on "Bath and Wells," at 8 p.m.

Thursday, November 21.
Architectural Association.—Conversazione at 8 p.m.

Monday, November 25.
Architectural Association.—Mr. Horace Cubitt, A.R.I.B.A., P.A.S.I., on "The Prosaic in Architecture," at 8 p.m.





Section

Part External Elevation



Plan Ground Floor



Plan 1st Floor

THE ARCHITECTS' & BUILDERS' JOURNAL.

Wednesday, October 23rd, 1912.

Volume XXXVI. No. 927.



(From Piranesi.)



THE AGRICULTURAL BUILDING AT THE OMAHA EXPOSITION, NEBRASKA, U.S.A. CASS GILBERT, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

OCTOBER 23rd, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 927.

The Claims of Decorative Architecture

HERE are certain pious claims in respect to architecture which we are accustomed to accept without ever considering what they really mean. They become shibboleths, and having been proclaimed from seats of authority times without number, go henceforth uncriticised. Such is the claim that no true architecture is attainable unless its outward form is the expression of its inner requirement. Yet, as a fact, no architect has the slightest intention of acting up wholly to that axiom. And very rightly, too, for it is futile to attempt to apply to architecture the treatment which is adopted completely in engineering. It is, of course, the old claim of the functional expressionist. We are told that the reason why engineering is a living art is because engineers consider fitness only when they are evolving a design. What locomotive engineer ever thinks of the proportion which his wheels will bear to the mass of the boiler, or whether the connecting levers will look too large or too small in comparison with any other parts? The size of the wheel is determined by mathematics, and the connecting lever by calculations of the stresses it will have to sustain. And we are told, further, that if only architects were to form their designs on a similarly functional basis there would be an end to all talk about artistic quality. Building could be architecture, and architecture building; and nothing perfectly expressing its function would, of necessity, be beautiful.

We thus come to the point that the essential art of to-day is not to be found in the crowded canvases of an academy season, not in our buildings, not in our musical and theatrical productions, but rather amidst the thunders of Jove and the hammer-beats of Vulcan in our great shipyards, in the creations of our machine shops, the titanic structures of our engineers, and the myriad ingenuities of our inventors.

The repetition of the time-worn adage about true architecture being the outward expression of its inner life is no other than the adoption of the view above outlined in connection with engineering. But, as already stated, architects do not accept any such view, and, in the opinion of the writer, it is time that the task were dropped.

There is no occasion to drag up examples from the fifteenth century in order to show what dreadful things occurred to a man's dinner because the kitchening had been put on one side of the house simply to displace the library wing on the opposite side. We have gone past that. The exigencies of internal requirement are admitted to be the determining factor in the arrangement of the plan. What is not generally admitted, though generally acted upon, is that architecture is something else than the clothing of a plan—and in its greatest achievements is a decorative rather than a functional expression. As Professor Beverley Robinson has put it: "The greatest works of architecture in all ages have been built largely to be looked at." What are all the towers of the Middle Ages for? Some few of them for defence, but of the rest what can we say—to hang bells in? But many Renaissance

churches have bells in some unnoticeable corner which seem to serve their purpose as well as if they were in a tower. Moreover, if we must have bells in a tower, why should we have two towers, as is so often the case in mediæval churches, and is still seen to-day? One of the towers must be superfluous. Whether one or two, how can we justify a spire on top of the towers—an undeniable superfluity. Or, to pass to another matter, what shall we say of the great stone-vaulted ceilings that were the crowning glory of Gothic architecture? They were begun in an effort to make a fire-proof basilica, but before they developed to perfection a separate wooden roof over them was found necessary, leaving the vault and the flying buttresses that sustain it a piece of pure theatricalism."

The essential requirement of a window is to admit light and air; what, then, is the use of the pedimented treatment? Of what practical utility are the Orders as generally applied to a building? And what function does the dome express? In the last-named connection we might cite the Wesleyan Hall as the most recent modern example. The actual hall is ceiled by a saucer-shaped inner dome of reinforced concrete, the outer dome being a decorative shell, added for the sake of its external effect.

Once the decorative claims of architecture are admitted, the whole system becomes intelligible. It is then seen that æsthetic effect has to be considered equally with practical requirements. There is no occasion to set them apart; the one is the embellishment of the other. But until this view is clearly accepted, the taunt of "shirt-front architecture" is a hard one to refute.

The attempt to put architecture on the same plane as engineering or to consider it merely in terms of building is bound to fail, because there is no recognition of the claims of decorative effect. After all, what is the use of the carving on the façade of a building, what practical purpose is served by fixing rich plaster-work to the beams of a ceiling, what need is there to add mouldings and beads to a door frame? All these things are done for purposes of effect only, and the only way to make the doing of them logical is to push the functional expressionists aside and to boldly declare that these effects are demanded just as much as the making of openings for passage, the introduction of water-pipes, or the boarding of floors.

It is, in fact, just because we do not sufficiently understand the decorative treatment of architecture that our public buildings are so sadly deficient. In the worst public library and the most appalling town hall there is likely to be plenty of air to breathe, the chimneys will draw well, and the walls keep out the wet. The buildings satisfy the practical requirements, but are, nevertheless, distressing on account of their decorative treatment—in which term one would include the whole subject of proportion equally with the details of enrichment.

What we want to do, then, is to make our position clear, and, having done so, to approach architectural design free from humbug and hypocrisy. A. C. N.

A Registration Bill.

IN his address last week to the Society of Architects the retiring president, Mr. George E. Bond (who is now succeeded, after four years' occupancy of the presidential chair, by Mr. Percy E. Tubbs, F.R.I.B.A.), stated that the proposed fusion with the Royal Institute not having been ratified, the Society intended to proceed to Parliament alone with its Registration Bill. In adopting this course we think the Society is ill-advised. It would certainly have been a great advance towards a homogeneous front if the Society and the Institute could have amalgamated, but the conditions attaching to this amalgamation roused so much personal feeling in regard to professional status that the ultimate refusal of the senior body soon became apparent. This was doubly unfortunate because, in our opinion, Parliament will never grant a Registration Bill unless it is backed by the whole profession, and on this account we consider that the Society is spending time and money to no purpose in its fresh endeavour. Only a Registration Bill put forward by the Institute, as the premier body, is likely to succeed. The Society of Architects has done excellent pioneer work in preparing the ground for so many years past, and in persevering so doggedly in its movement for registration against continuous opposition from those who do not feel the competition that results from the present state of things. The Society has its reward in the knowledge that it has been instrumental in altogether changing the attitude of the Institute towards registration; but, in our opinion, the Society cannot hope to secure the desired Bill from Parliament through its own direct representation. Nor do we think that the suggested scheme of ateliers is likely to receive the support of the main body of the profession.

The St. George's Hall Scheme.

THE opposition to the scheme for cutting into the podium of St. George's Hall, Liverpool, is still gathering impetus, and by the time the Local Government Board inquiry is held we hope that there will be sufficient force brought up to quash the proposal. Of special importance in this respect is the resolution which the Council of the R.I.B.A. has just passed. In this resolution the Council expresses the opinion "that alterations to such a building are only justifiable when inevitable, and trusts that, in view of the widespread opposition of architects to any interference with St. George's Hall, the City Council will reconsider the matter." This is politely worded, but is, nevertheless, a forceful protest, and we shall be surprised if the memorial scheme succeeds in face of it.

The Latest in Competitions.

IN the "Western Mail" for last Wednesday there appeared two advertisements which are worthy of being included in the Architects' Black Book. They both emanated from library and institute committees, and are therefore to be taken as representing the enlightened opinion of the educated public. One advertisement invited "tenders from fully-qualified architects" for preparing schemes for developing a site at Blackwood, Mon., upon which it is intended to build a library, institute, billiard-room, swimming bath, etc.—in fact, what may be called a good all-round building—at a cost of £5,000. In this the competing architects are to submit two prices—one "for preparing plans, specifications, personal supervision of the work, and all necessary details required in the carrying out of the scheme, and also for the preparation of the bills of quantities"; the other for "carrying out the whole of the work above-mentioned with the exception of the bills of quantities." The second advertisement asks for competitive designs for another institute and library, at Abercwmboi. In the first case the committee state that they "do not bind themselves to

accept the lowest or any tender," and in the second case, in addition to this usual declaration, though applied in respect of "any plan submitted," the committee add that "no fee will be paid"!

Skyline.

REVERTING to this matter, we may note how bad the back of the Piccadilly Hotel looks when seen from the Quadrant. Standing right opposite we may be impressed with Mr. Norman Shaw's elevation, as the main cornice then stands out against the sky and forms a proper termination. But as we pass along the street the upper part of the Piccadilly Hotel becomes visible, rising higher and higher above the Quadrant façade. And the effect is appalling. This is one of the worst modern instances of its kind that we can recall, but there are numerous others that indicate the same necessity of considering a building as a three-dimension actuality seen from many points of view, and not as a detached elevation seen from a selected spot directly opposite. In the addition which has been made to the Burlington Arcade in Piccadilly we have a striking example of this, for the plinth of the balustrade is there cut off from view at street-level by the projecting cornice below, and consequently presents a great difference in appearance as compared with the elevational drawing. On top of the "Morning Post" building we see an unfortunate collection of tanks against the sky, and above the line of the Admiralty arch the tops of some lanterns can be seen; while the National Gallery and Somerset House bristle with miscellaneous constructions on the roofs. If a balustrade is adopted as a finish to the upper part of a façade, it should completely screen any necessary evils that may be behind it or it should be discarded altogether, and chimney-stacks, tanks, or what not should be frankly treated and made presentable.

WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS.

IN the present issue we publish the second of our new series of working drawings by well-known architects. The value of these illustrations is self-evident. They show in detail exactly how the work is carried out, and the manner in which eminent architects prepare their drawings for the builder.

The architects whom we have approached in this connection have, without exception, been good enough to place drawings of their most important buildings at our disposal, and we thus have been enabled to bring together a series of illustrations which will be of the greatest value and interest.

Last week we began the series with a half-inch detail of the Lincoln Free Library, by Professor Reginald Blomfield. This week we give a working drawing showing details of the terrace around the National Museum of Wales, now being erected in Cathays Park, Cardiff, from designs by Messrs. Smith and Brewer; while drawings in hand, for publication in subsequent issues, show work by Sir Aston Webb, Professor Beresford Pite, Mr. E. L. Lutyens, Mr. E. Guy Dawber, Mr. R. Frank Atkinson, Mr. Edwin T. Hall, Mr. J. J. Burnet, and other well-known architects. The series will thus be a thoroughly representative one.

The drawing reproduced on pages 446 and 447 of this issue is, like all the drawings in the series, more or less self-explanatory. It may be noted, however, that this is one of the drawings prepared for the first contract for the National Museum of Wales, and shows a part of the terrace surrounding the garden in the Central Court. Only those portions are hatched which are included in the contract, which runs to the ground floor only; this renders the drawing less clear than would otherwise be the case.

ITALIAN ARCHITECTS OF THE RENAISSANCE.

II.—Sebastiano Serlio.

BY H. H. STATHAM, F.R.I.B.A.

SERLIO, more than any other of the Italian architects of the period, may be said to have been the Vitruvius of the Renaissance. Like Vitruvius, his reputation rests on his writings rather than on any buildings which he is known to have carried out; his principal work, and the studies which led up to it, were stimulated by his study of Vitruvius; and, like his Roman predecessor, he took the line in his writings of going through the consideration of various classes of buildings successively, and giving his ideas as to the manner in which they ought to be treated; only he did this on a much more extensive scale than Vitruvius, and accompanied his theories and recommendations with a crowd of illustrations. These latter we can see only in the old coarse engravings of the editions of the sixteenth and seventeenth centuries. There is apparently no modern edition, nor probably would it be worth while to produce one; the view of architecture which it embodies is, in the main, that of a past day. But his works are interesting as representing a great body of thought and suggestion in architecture from the sixteenth century point of view, and not without ideas which may still be of value.

Serlio, whose life was a very chequered and not a very fortunate one, was born at Bologna in 1475, and traditionally had in his younger days some architectural practice in his native town. It seems to have been about in his thirty-fourth year that his interest in the writings of Vitruvius led him to travel in order to study and measure the remains of Roman architecture, and he seems thus to have led a rather wandering life from 1509 to 1514, but either in the latter year or the following he settled at Rome for some time, where he entered into a close friendship with Peruzzi, who, at his death in 1536, bequeathed his manuscripts and drawings to Serlio, who is believed to have made considerable use of them in his subsequently published works. He visited Verona and Vicenza, measured the ancient monuments at Verona, and at Vicenza designed and erected a permanent theatre scene, as Palladio did after him. That this form of architectural creation had a great fascination for him is evident from a passage which we shall come upon in one of his published works. He is next heard of at Venice about 1532, where he is credited with having designed a wooden ceiling in the old library of the Ducal palace. After some further travelling he returned to Venice, and there published, between 1537 and 1540, what are now the third and fourth books of his complete treatise, which were, nevertheless, the first published. In 1541 he was drawn into the service of Francis I. at Fontainebleau, where he was for a time established as consulting architect, though it is not clearly known whether any portions of the palace there were really designed by him. He is traditionally said to have designed the façade next the canal. It was during his residence at Fontainebleau that he wrote the First and Second books of his great work, which deal with Geometry and Perspective. On the death of Francis I., in 1547, Serlio was superseded in his post at Fontainebleau by De l'Orme, whence we may gather that the æsthetic monarch had been Serlio's friend and retained his services as long as he lived. After that there is not much known of Serlio, beyond the fact that he was for a time at Lyons, where he produced his sixth book; the seventh was probably written there also, but he was too poor to publish it, and subsequently sold it to one Strada, an antiquary of Mantua, who after Serlio's death published it at Frankfort in 1575. It is believed that Serlio returned to Fontaine-

bleau afterwards, and that he died there in 1552, it is said in great poverty.

It seems anything but a prosperous or successful life, yet his book, brought out at different times in this fragmentary manner, is a monumental production, and must have had a considerable influence in the architectural world of his day. The earliest copy we have seen is the "Architettura," containing five books, published at Venice in 1551, a year before his death. The Institute Library has a copy of this in remarkably good condition, much better, in fact, than some of the later editions. A complete edition of the whole seven books, "Tutte l'Opere d'Architettura e Prospettiva," was published at Venice in 1619, and in 1663 there was a republication of the five books, originally published there in 1551. The only English edition we have come across is the folio published in London in 1611, itself a translation from a translation into Dutch, a fact which shows that the book must have had a wide circulation, though unfortunately Serlio did not live to profit by it. The translation is very badly done, as far as style and expression are concerned, and the names of places and of architects appear in Dutch spelling ("Bramant" for "Bramante," and so on), but the general sense appears to be well conveyed. This Dutch-English edition only includes from the second to the fifth books, the first and the two last being omitted.

The first two books deal with general principles of geometry and perspective, as the foundation of architecture. The one on perspective is exceedingly full, and is illustrated by numbers of excellent diagrams, and would be a quite satisfactory treatise on perspective for the present day, were such a thing required. Book IV. is the most important and most interesting portion of the publication. This deals successively with the Orders and their different uses in different departments of architecture. There are various remarks that throw an interesting light on the manner in which architecture was regarded in his day. A loyal student of Vitruvius, Serlio has nevertheless to admit that he finds "a great difference between the writings of Vitruvius and some of the monuments at Rome." His idea as to the uses to which the Doric Order should be put is rather curious. He observes that the ancients ordained the Doric Order for the temples of their gods (it seems odd that he should not have observed that nearly all the temple remains in Rome are Corinthian), and that we who are Christians, and build temples dedicated to Christ, and Paul, and other saints who fought valiantly for the faith and laid down their lives for it, should also employ this Order in their honour, "and the nobler a man is for whom such work is done the stronger and statelier it ought to be," which is a wholesome doctrine of architectural symbolism, at all events. As with Vignola, the numerical proportioning of parts in architectural design is regarded as of great importance; nor can one undertake to say that there is nothing in it. In Chapter 6 of Book IV. we have the façade of a house with a Doric pilaster order on it (which we have reproduced as Fig. 1), and the directions for setting it out: divide the width of the elevation into twenty-four parts (the Italian edition has "14," a misprint which the translator faithfully reproduces), of which the width of a pilaster is one part; the centre intercolumniation six parts, the side intercolumniations three parts; the width of the windows one-and-a-half parts; the height of the windows two squares and a half (of the width). Is there anything in this proportioning by measurement or not? We



FIG. 1.
DESIGN FOR THE FACADE OF A HOUSE.
(From the English translation of Serlio, 1611.)

are inclined to think that in the production of harmonious proportions of parts in a building there may be more in it than is now usually supposed; it is worth consideration. In his design for a window with a framework of columns and pediment we find the width

of the window opening made the modulus; divide the width of the opening into five parts, and take one of these for the column. Both the house front and this window come into the Doric division of the treatise, and in regard to the window there is a question raised which is still a debated one. The recessed portion of the design on each side shows the triglyph at the angle, Greek fashion. In the centre portion of the design the triglyph is placed over the centre of the angle column in the manner always employed by the Renaissance architects. Serlio apologises for the angle triglyph at the sides, and says he is aware that it is contrary to Vitruvius, but he has seen it placed that way on some ancient examples. He does not say it was universal in the ancient examples. Was it usual with the Romans or not? There is only one piece of Roman Doric with an angle left, apparently, the temple at Cora, and that has the triglyph at the angle. Serlio seems to have thought, however, that this was exceptional; he had only noticed it on some buildings. The odd thing is that he mis-reads Vitruvius, who distinctly says that at the angle of a building the triglyph is *not* set over the centre of the column. Our impression is that the Romans must have used the other position of the triglyph, away from the angle and over the centre of the column, in some of their buildings, otherwise the Renaissance architects would not have ventured to do so. It is clear, however, that Vitruvius does not sanction it.

Serlio shows a fluted Doric column in his drawings of the order, though the best-known Roman example, that of the Theatre of Marcellus, is not fluted. Between the triglyphs, he says, you should sculpture *fulmines*, i.e., symbols of lightning, winged darts in a zig-zag design; otherwise, he says, you may leave the spaces (metopes) plain, a recommendation which shows conclusively how totally ignorant the Renaissance architects were of Greek Doric, with its sculptured decoration.

In speaking of the Ionic Order Serlio repeats the idea, rather common with the Renaissance architects,



FIG. 4.
DESIGN FOR A CHIMNEYPiece.
(From the original, Venetian, edition of Serlio, 1551.)

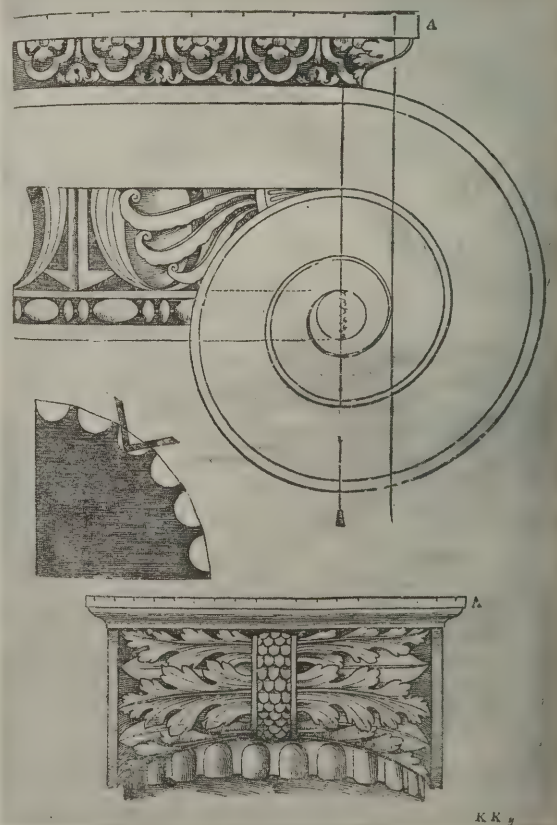


FIG. 2.
SERLIO'S METHOD OF DRAWING THE IONIC CAPITAL.
(From the original, Venetian, edition of Serlio, 1551.)

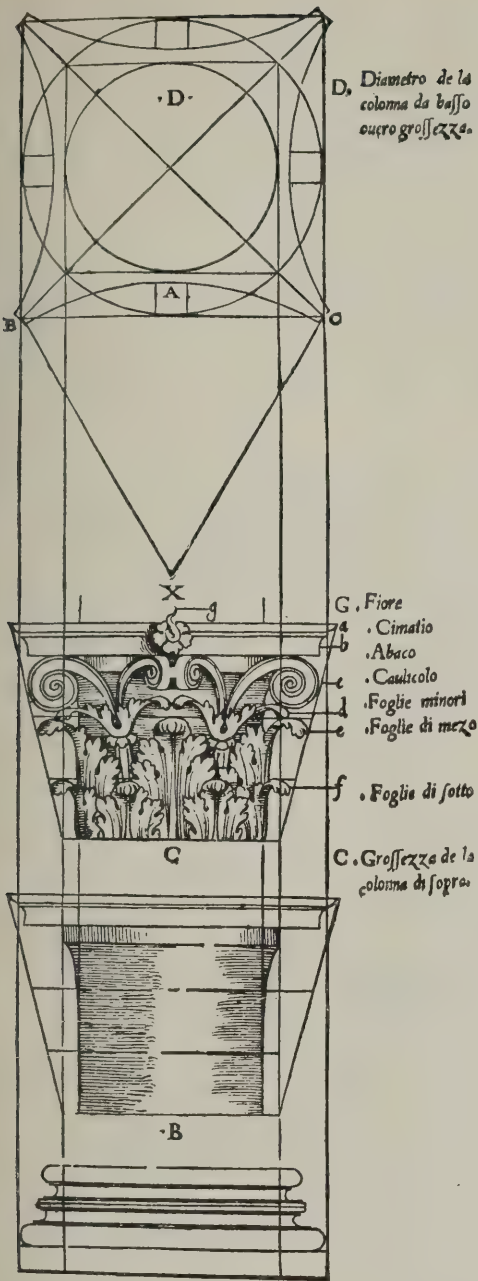


FIG. 3.

SERLIO'S METHOD OF DRAWING THE CORINTHIAN ORDER.
(From the Venetian edition, 1551.)

that there was something feminine about this order, as contrasted with the masculine vigour of the Doric, and asserts (probably on the authority of Vitruvius) that the ancients appropriated it to temples to female goddesses. It was, in fact, used for the great temple of Diana at Ephesus, though Serlio could not have known this. He gives a fine page of drawings of the Ionic capital and cornice (Fig. 2), noting in regard to the dentils that they should have interspaces "one-third less than the face," and their height should be double their width, with which we cannot agree; they look too high and narrow. His drawing of the Corinthian capital (Fig. 3) is of some interest. He sets out the projection of the extremities of the leaves and volutes by a line drawn from a base at the necking to the greatest projection of the abacus, the points of the leaves and the outer curve of the volute to be bounded by this line. He makes a note in regard to the base of the column which is of general application, viz., that if the column is placed in a position high above the eye the depth of the base must be increased, in comparison with what it would be when on a level with or below

the eye, as it would appear lessened in that position. Probably he is not referring so much to foreshortening as to the fact that the line of the podium on which the base must stand would cut off a portion of it from sight, when seen from below. If it were a question of foreshortening it should apply to the shaft and capital as well, and the remark suggests a point worth considering in architectural design generally—whether the proportions of any feature should not be modified when placed at a considerable height. They will not in such a position appear the same to the eye as they appear in the elevation on paper. In fact, Serlio remarks in another part of Book IV. that in a very high building with superimposed orders it is not well to reduce the height of the orders in the higher stories, as the effect of perspective will do that for you. Another suggestion which Serlio makes in regard to the treatment of the order, and illustrates by a sheet of examples, is that applied orders, engaged pilasters, and columns, may be designed in more slender proportions than those which are actually carrying weight. He takes Vitruvius's proportions for the order as applying to weight-carrying columns, but not necessarily to those which are only used in a decorative manner.

As Serlio aimed at nothing less than showing how everything that an architect could undertake should be done, designs for all kinds of things are to be found in his pages. There is a fine sheet of capital letters, very well designed, though rather badly printed; a number of designs for ceilings, some of them very elaborate in the decorative taste of the Renaissance period; and a number of designs for fireplaces, as things for which the ancients supplied no precedent. These are not very successful, but the one which we give as Fig. 4 is so characteristic of the period that it is worth showing as a curiosity.

Book V. is more distinctly architectural in character, as it is mainly occupied with suggestions for different forms of plan and their treatment—"Divers manners of temples"; and the round form being the most perfect, he will commence with that. "And though in our time, whether by reason of small devotion, or the cruelty of men, there are no more great churches begun to be made, and that men do not finish those which in former time have been begun [the four centre piers of St. Peter's were at this moment standing naked in the open air waiting till some one daré build the dome on them], therefore, I will make mine so small that with

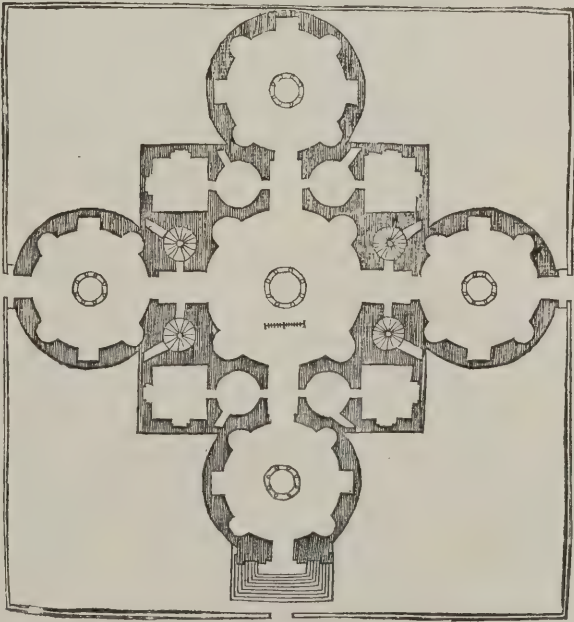


FIG. 5.

PLAN FOR A BUILDING.
(Venetian edition.)

little cost they might in short time be erected." Accordingly, he commences with a plan for a circular church 60 ft. in exterior diameter, but with walls 15 ft. thick, in order to scoop chapels out of them; that is the Renaissance idea of economy in building. The ellipse is the next most perfect form after the circle, so we have a plan which may be called an elliptical Pantheon, and there follow schemes for a pentagon plan (with immense side chapels and a coffered domical roof)—a hexagon plan, an octagon plan, etc.; and more interesting than these, the plan we give as Fig. 5, which is really a fine conception in planning, out of which wonderful interior effects might be made. In another place he also gives Bramante's celebrated plan for St. Peter's, with an interesting note:—

I said I would speak chiefly of antiquities, but will not omit

is rather questionable. It is evident that he was very much afraid of the problem of St. Peter's dome, when he was appointed architect to the fabric, and, in fact, dare not touch it.

There seems to be nothing that rouses Serlio's enthusiasm more, however, than the art of building up scenes in perspective for theatres. He becomes quite eloquent over it.

This passion for the creation of scenic effects was one of the characteristics of the Renaissance. We know how much time and talent Inigo Jones spent over it in England. The fascination of erecting a built scene with everything arranged so as to produce an artificial perspective in the round, so to speak, one can quite understand, and it may be more effective in a scenic sense than a painted scene. The drawback is

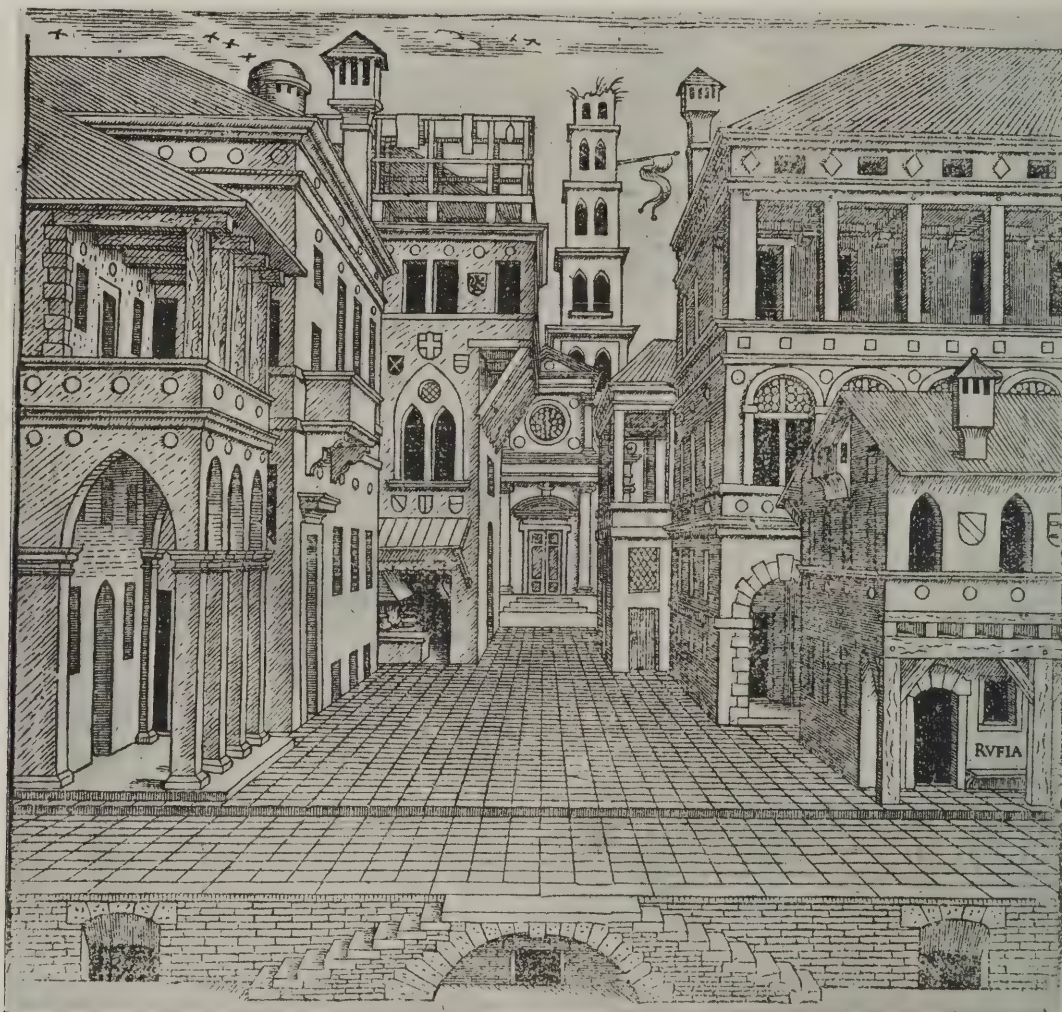


Fig. 6.

A BUILT SCENE FOR A THEATRE, BY SERLIO.

(From the English translation, 1611.)

to notice some modern things made in our own time, because our age hath produced so many good wits for invention in architecture. There was in the time of Pope Julius II. an architect named Bramante, of Casteldurante, in the dukedom of Urbino, who was a man of so great understanding in architecture that it might be said that he revived good architecture again, which from ancient time to then had been hidden and kept secret. He laid the foundations of the wonderful work of St. Peter's in Rome, but being prevented by death left it unfinished and the model imperfect; it was finished by Raphael, a man also very skilful in architecture, and is, in my opinion, one of the finest draughts of a plan that is to be seen.

There is a tradition that Serlio was a pupil of Bramante. This may partly account for his enthusiasm, which, however, was perfectly justified. As to Raphael also being "very skilful in architecture," that

that you are saddled with a permanent scene for a variety of plays. However, Serlio evidently took a great delight in it, and Palladio after him. Serlio gives drawings of one or two of his built scenes, one of which we reproduce as Fig. 6.

Serlio's book is unquestionably one of the most important publications, one of the widest and most diversified in its grasp of the subject, as it was seen in his day, that the art of architecture has ever called forth. It was a life's work, to which he gave all his energies amid a life apparently of great difficulty, and from which he gathered little profit, though perhaps a good deal of reputation. He deserves a niche with Vitruvius in the annals of architectural literature.

HERE - AND THERE.

THEORETICALLY, it is perfectly feasible that an architect may combine an intimate knowledge of construction with a practised facility of design; so that one and the same man may turn from an artistic creation of his pencil to a complex calculation of stresses in a steel-framed structure. But in reality it is rare to find such a man; in fact, one and one only have I known—a distinguished Scotch architect in London, whose buildings are as great a delight to me as his formulæ are unintelligible.

If we are to believe all that the biographies tell us, of course some of the great Italians were versatile to the point of genius, so that we have Leonardo painting an immortal Madonna Enthroned one day and anticipating aviation the next with a scientific analysis of a bird's wing. But, after all, the problems of the past are nothing like so complex as those of the present. Compare, for instance, the task of the Gothic church builder with the problem which the architect of to-day has to face in the erection of a huge block of offices on a restricted city site: and think how the latter is circumscribed by a score of requirements—of time, of cost, of business convenience. And the comparison becomes even more striking if we go back 2,000 years or so to the Acropolis. Fancy Callicrates being confronted with the difficulty of carrying six floors of flats on top of 30 ft. of shop window, or Ictinus having to design a reinforced concrete silo! As a fact, very few architects of the present day are able to go deep into structural mechanics: truth to tell, they like them not, preferring to take up that useful compilation, the section book, where the calculations are worked out and the particular beam required is ready to hand. It seems probable, moreover, that as years go on, and construction gets still more complex, the division of work involved in the erection of modern buildings will become increasingly marked, until each portion stands distinct. In the case of some of the large firms of architects in the United States this is already so. We there have, perhaps, a triumvirate of creators working for one result. First comes the business partner, who has to secure the work and to organise its details when once secured. Next the engineer, who lays out his frame plan, his beams and his stanchions. And lastly the architect, whose task it is to clothe the skeleton in a suitable architectural frame, to embellish it within and without, and, in a measure, to weld the separate parts into one homogeneous whole.

In some cases the three units in the American architectural office may be reduced to two, or increased to four, and the order of their respective requirements, as governing factors in the design of the building, may become altered: but, in a broad sense, the result is the same: it means that one man's whole time is taken up by the study of his particular branch. And this, as it works out, is really an admirable arrangement.

In England a similar process of division of professional labour is taking place, though the engineer is generally an outside agent, and not a member of the firm to whom the work has been allotted.

This collaboration of architect and engineer is responsible for some curious results. It may mean, for instance, that the architect, in his ignorance of the engineering structure, has qualms about its safety. This was so in the case of a certain celebrated new business building in London, where the entrance columns, ostensibly supporting the superstructure, are no more than decorative features: the whole burden being taken by the humble steel girder within its granite envelope. One day, shortly after this façade was completed, the clerk of works was wildly alarmed; the columns had commenced to splinter at the top, and the whole front appeared to be on the point of collapse.

The engineer was hastily summoned, and a few questions put by him to the clerk of works soon settled the trouble. The engineer had given precise instructions that the entrance columns (of granite, in sections) were not to be built up to their full height until the whole of the load above had been put in place. This instruction, however, had not been obeyed: the columns were built close up to the lintel, and when the latter began to take up the full load it sagged a little and crushed the pillars below. It was not an easy problem to deal with, but the engineer solved it satisfactorily by tapering away the top segments of the columns as one sharpens a pencil: by which means the upper part of the structure was gently lowered and the carrying beam took up its permanent deflection.

* * * *

If in the days, say, of William of Wykeham there had been in existence a Society for the Preservation of Ancient Buildings, what scope for its activities! The builders of those times had no scruples about pulling down or altering the work of their forbears. If an Early English nave were not large enough to accommodate the increasing number of pilgrims who were drawn to a church by some holy shrine, then there was no question about substituting Decorated or Perpendicular, as the case might be.

The buildings which now are venerated as impeccable works of art were certainly not regarded as such by their producers, for the simple reason that art was vernacular. People built houses then just as children talk English now, and while, as one writer has put it, the divines who translated the Bible in the early part of the seventeenth century were unconscious stylists in words, so the old builders were unconscious stylists in brick and stone.

At the present day it is impossible to get back to that condition, even assuming that a living tradition guided us. The unconscious artist is long since dead, and what is done now is all carefully planned beforehand. The birth of the Renaissance was the death of vernacular art. But the work of the greatest modern master, self-conscious though he be, is no less interesting than that of the thirteenth-century master. You may have, for instance, a sturdy candlestick honestly wrought by a craftsman who carried a pike before Harfleur, and beside it a glorious piece of Sheffield plate produced for the special gratification of an eighteenth-century dilettante; they are both delightful, each in its separate way, but they are not directly comparable. So that even if vernacular art has been supplanted by art which is manifestly conscious, we are not without the possibility of achieving fine results.

* * * *

There are some matters connected with architecture which have been discussed, without finality, since the days of Vitruvius at least. One of these is the theory of proportion. The endeavour has been frequently made to prove that there exists some mysterious law which ordains a certain ratio of length to breadth, and so on: but no proof positive is possible. Our eyes, however, establish the visible fact for us; by simply looking at a thing we can say whether it is out of proportion or not, and all the theorising in the world will not alter that fact. But it would seem that this is part and parcel of training and heredity. For without being told that a certain proportion was wrong we should never know; no instinct would tell us, nor would our eyes intuitively establish the fact: which brings us back to the point first reached—that no proof positive is possible. We can say there *is* a law of gravitation, but we cannot affirm as much in regard to proportion.

UBIQUE.

CORRESPONDENCE.

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents. Correspondents are asked to be brief and to write on one side only of the paper.

Architectural Examinations.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Your correspondent W. (Dublin), in the issue of October 6th, takes exception to the Society of Architects' last examination. In the paper on Quantities, he says, only one question was open to him, because he had forgotten the fraction .7854; but if he had been properly trained in squaring dimensions he would not have wanted these figures—they are not used by quantity surveyors. He objects to questions on "foot-candle-power" and "carbon and metallic filaments in electric lamps," under the head of Sanitation, of which the sections are water supply and drainage, lighting, heating, and ventilating; but an architect who does not know what is meant by "foot-candle-power" and the principal difference in use between "carbon and metallic filaments" is not in a position to advise his client as to lighting a factory. The question in building construction to which he objects is one that is constantly arising in practice, and all necessary data are given to enable an answer to be worked. The next paragraph of your correspondent's letter shows his absolute ignorance of the principles involved in the case. I fully agree with his remark that "examiners would do well to remember the true object of examinations—i.e., to test the skill and experience of the candidate," but he does not say what the examiner is to do when he finds neither the one nor the other.

HENRY ADAMS.

Wind Pressure on Roofs.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Mr. W. E. Barker's reply to his critic X in your current issue hardly meets the point raised; which is that Hutton's formula (of which Mr. Barker's diagram merely plots the values in convenient form) indicates that on steep slopes a horizontal wind pressure creates a component greater than itself at right angles to the slope.

The fact that Hutton's formula is largely used is no criterion of its correctness. It has stood in Rivington, Molesworth, etc., for many years; but what checks have been applied during that time either to its mathematical accuracy or the reliability of the experiments upon which it is based? The latter were made many years ago when experimental apparatus, especially for small scale work, was scarcely reliable.

As Mr. Barker refers to experiments on wind pressure it may be material to remind your readers of the recent and very extensive series of experiments by Dr. Stanton at the National Physical Laboratory, Teddington, on the effect of wind pressure on roof slopes. (Vide Journal of the N.P. Laboratory, and Proc. Inst. Civil Engineers Vol. CLXXI.) These experiments made at a Government Laboratory with a highly trained staff and the best large-scale measuring instruments, by no means bear out the correctness of

either Hutton's or Duchemin's formula ($P = P \frac{2 \sin \phi}{1 + \sin^2 \phi}$) which is perhaps more largely used by structural engineers.

A summary of the Teddington experiments was very kindly prepared for me by Dr. Stanton, and is published with other data on the same subject in the Proc. of the Junior Inst. of Engineers Vol. XXI No. 10 and in "Principles of Structural Mechanics" (Batsford).

Both Hutton's and Duchemin's formula neglect the

very important negative drag on the lee slope of roof and the large variations between different types of roofs.

A practical comparison of the results of applying Hutton's and Duchemin's formula and the National Physical Laboratory's results to a horizontal wind pressure of 30 lbs. per square foot (i.e., such as would be caused by a violent hurricane at a velocity of 98 miles per hour) is as follows:—

HUTTON'S FORMULA. ALL TYPES OF ROOF.			
Angle of Roof Surface.	30°	45°	60°
Windward Pressure PN	20 lbs.	25.5 lbs.	30 lbs.
Leeward Drag	nil	nil	nil
DUCHEMIN'S FORMULA			
Windward Pressure PN	24 lbs.	28 lbs.	28 lbs.
Leeward Drag	nil	nil	nil

NATIONAL PHYSICAL LABORATORY TESTS.
Roof mounted on columns through which the wind can pass harmlessly.

Angle of Roof Surface	30°	45°	60°
Windward Pressure PN	14 lbs.	26 lbs.	32 lbs.
Leeward Drag	negligible	negligible	negligible
TOTAL	14 lbs.	26 lbs.	32 lbs.

Roofs so constructed that a direct internal pressure may be established on the interior by open sides or by large open doors or windows.

Windward Pressure PN	14 lbs.	26 lbs.	32 lbs.
Leeward Drag	21 "	25 "	30 "
TOTAL	35 lbs.	51 lbs.	62 lbs.

Erected on buildings with the internal surface protected from wind pressure (approximate).

Windward Pressure PN	negligible	9.4 lbs.	14 lbs.
Leeward Drag	14 lbs.	9.4 "	9.4 "
TOTAL	14 lbs.	18.8 lbs.	23.4 lbs.

PERCY WALDRAM.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

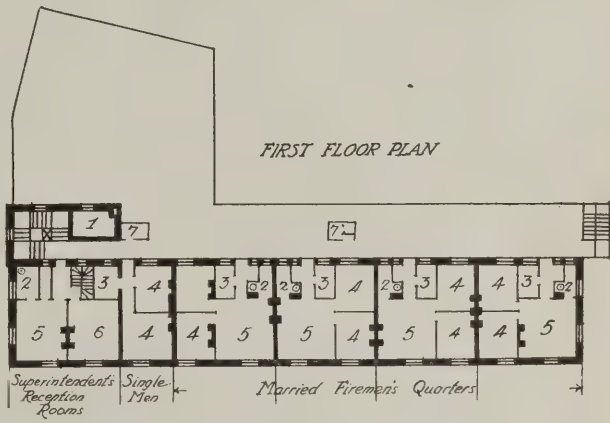
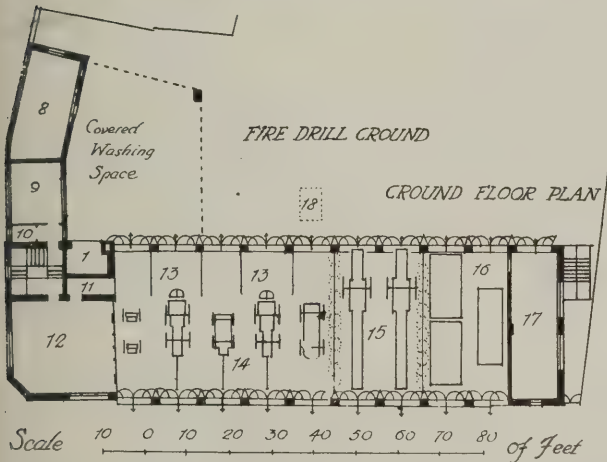
SIR,—Mr. Barker appears to have missed the point of my communication. What I wished to know was how he could reconcile, with a horizontal wind pressure a greater force on an inclined surface than on a vertical surface.

For the time being I am not concerned with any saving of material, because it is evident that the difference from a practical point of view is negligible.

The reference to Molesworth and Andrews' "Theory and Design of Structures" avails very little because neither explains the point at issue, but simply states the formula (Hutton's).

The comment as to "the formula in question is perhaps, etc., etc.," appears to have been copied from Andrews's book, as also do the multipliers.

In Andrews' book we get a multiplier of 1.02 for 70 deg., 1.01 for 80 deg., and 1.00 for 90 deg. Does it not therefore appear that the wind pressure is not truly horizontal, but has a downward direction towards the



1, Hose tower; 2, scullery and sliding pole; 3, bath and w.c.; 4, bedrooms; 5, living rooms; 6, parlour; 7, pole house; 8, hayloft; 9, clothes drying-room; 10, w.c. and lavatory; 11, press; 12, men's reading-room; 13, stalls; 14, engine-room; 15, fire-escapes; 16, prison van and ambulance house; 17, repair shop; 18, water tank.

CARDIFF FIRE-STATION COMPETITION: FIRST-PREMIATED DESIGN. E. VINCENT HARRIS AND T. A. MOODIE, ARCHITECTS.

earth, such downward direction being so inclined as to give a maximum normal component with a roof slope of 70 deg.?

Of course I can realise there is a dragging effect on any inclined surface, but if the wind is truly horizontal I don't see how we can possibly get a greater pressure on an inclined surface than on a vertical surface, which is normal to the direction of the wind when acting horizontally. Perhaps Mr. Barker will explain the point at issue.

X.

The Position of the Official Architect.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Mr. Cyril Power seems to object to my avoiding "the consideration of the somewhat superior salaries of the official assistants." Though such discussion seems to me to be putting architects and architecture on a plane with the tradesmen he mentions, who exploit our art for mere gain, as he wants actual figures I would refer him to the estimates for Civil Services last year, published by H.M. Stationery Office. These are not without interest, and one is glad to see that in the Office of Works the salaries of the forty-seven of the permanent staff of assistant architects and surveyors of the first class range from £350 to £450 per annum, and of the assistant architects and surveyors of the second class from £200 to £300.

This evidently does not make for economy, for the total permanent staff of architects is only about sixty

strong, and there were last year about 227 other draughtsmen and technical assistants working for £23,800, or an average of about £100 per annum for each assistant.

Such figures speak for themselves, and will also be of interest to Mr. Dixon.

HERBERT WIGGLESWORTH.

Builders' Benevolent Institution.
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Having accepted the office of president for the year of this old and well-known builders' charity, I have to make the usual appeal for assistance to carry on the work.

I am naturally most anxious that the amount subscribed should not fall below that of previous years, but in order to do this it is necessary that all those interested in the immense building industry should continue their subscriptions and donations and, where possible, increase same, more especially as during the last few years the applicants and deserving cases have been continually on the increase, and we are most anxious not to be compelled to reject any eligible and approved candidate owing to lack of funds.

The annual dinner will take place at the Whitehall Rooms, Hotel Metropole, Charing Cross, W.C., on November 14th next.

F. G. MINTER, President.
Ferry Works, Putney, S.W.

BUILDERS' WEIGHTS AND MEASURES
IN THE MIDDLE AGES.

BY H. LITTLEHALES.

AN attempt is here made to afford some idea of the measures used by builders' merchants in the Middle Ages. It will be seen that we have not been able to discover at what time the hundredweight contained the present added 12 lb., and that also in the case of one or two other measures we have been able to give only a reference to the name and some further details, without being able to explain the capacity or weight.

A curious fact connected with measures is the selling of oak timber by the ton.

Bag. Nails were sometimes sold by the "bagge" and "half bagge" (Record Office MS. Exch. Acc. 504-2). In Murray's great dictionary we see two quotations are given respectively of weight and capacity—in one the bag is spoken of as representing 3 cwt.; in the other the capacity of a bag is said to be three bushels.

Bushel is a common term in building accounts. In Robert Recorde's "Ground of Artes," published in 1543, the bushel contained 4 pecks.

C. The letter "C" stands very commonly for a hundred.

Clamp. "Clampys" of bricks are mentioned in the Record Office MS. 465-20. Bricks were commonly sold by the thousand and in smaller numbers. In very large numbers they were sold by the clamp. Murray tells us that a clamp of bricks was a large quadrangular stack or pile, and gives a quotation from the seventeenth century referring to a "clamp of 16,000 bricks."

Emperell. In the records of a City church (E.E. Text Soc.), under date 1487, we read of the purchase of an "emperell of freestone quarter vi foote di," price 22d. We are not able to give the equivalent of an emperell nor the meaning of quarter six foot half.

Foot. This measure often occurs.

Fother. Halliwell says 19 cwt., Murray 19½.

Golei. In MS. 488-16 the purchase of "golletes" of fuel to melt lead with occurs several times. We are, however, unable to give an idea of the capacity of a golet.

Hundred. Robert Recorde in 1543 tells us that the "hundred is not just 100, but is 112 lb," and that a half-hundred was 56 lb., and a quarter 28 lb. In the Century Dictionary the hundredweight is said in America to-day to be 100, not 112, lb.

Inch. Often mentioned.

Load. Various materials were sold by the load, but it is not always clear whether a horse or cart load is intended.

Mounte. Plaster was sold by the "mounte." This measure is specified in MS. 465-20 as equivalent to "30c," by which probably thirty hundred pounds is meant, but 30c. may be intended to have represented 30 cwt.

Peck. In common use. The peck was equivalent to 2 gallons. (Recorde, 1543.)

Pound. Often used.

Quarter. In capacity the quarter was equivalent to 8 bushels, and in weight to 28 lb. (Recorde, 1543.)

Seame. Lime was sometimes sold by the "seame." In MS. 504-2 lime cost 6d. a "seme." Halliwell, in his Dictionary of Archaic and Provincial Words, tells us that a seam was a horse load.

Some. In MS. 504-2 we read of the purchase of "one some of ruff (roof) nail" for 5s. and the purchase of "haufe a some."

Stocke. In MS. 488-30 we read of the purchase of wood to melt lead with at 3d. a stocke.

Stone. A common term. In 1543 the stone was equivalent to 14 lb. (Recorde.)

Stryke. Lime and sand were sometimes sold by the

stryke. (MS. 485-12.) In Halliwell's Dictionary we see that a strike was another term for a bushel.

Ton. In common use.

Web. In MS. 488-21 we read of the purchase of "webbys" of lead. Halliwell tells us that a web was sheet or thin plate of lead.

Yard. A common measure.

THE STYLE FOR THE NEW DELHI

IN the newspaper discussion on the problems of design that confront the projectors of India's new capital Mr. T. G. Jackson, R.A., expresses a broadly philosophical view of the situation:—

"It is significant of the almost hopelessly chaotic state of modern art that the first question arising out of the scheme for the new capital of India at Delhi is that of the choice of an architectural style. When a man sits down to write a book he does not consider whether it shall be in the style of Swift, Carlyle, or Macaulay. He simply follows his own instincts. He does not hesitate, if he is going to paint a picture, whether to do it in the manner of an Italian primitive or of a post-impressionist; nor, if he is a sculptor, does he doubt whether he will follow Donatello or Rodin. He has studied all these masters and learned from them all, but his style is natural to himself and not imitated from any one of them.

"To claim the same liberty for the architect would be denounced as the worst of heresies. Every writer seems to have made up his mind that the new Delhi must be in some recognised style of bygone architecture, and the only question is, Which shall it be? Some argue for Classic, some for Saracenic; happily nobody nowadays would recommend Gothic, the child of Northern skies, which is as ridiculous in India as the Pavilion at Brighton.

"That is not the way in which to get the best architecture. Our best artistic suggestions for design come from necessities of construction and considerations of utility:—

"Nunquam vera species ab utilitate dividitur."

"To seize on these suggestions and draw inspiration from them is the true path for the architect to follow, to be able to meet them and satisfy them successfully is the proper end of all architectural study. We should study works of art, not to copy them, but to be impregnated with their principles; and if our study has done its work we should be so saturated with the true principles, not of this or that particular style, but that of architecture itself, which is a very different matter, as to be ready for any novel conditions that may present themselves.

"Such conditions no doubt do present themselves at Delhi, and there could be no more splendid opportunity for a sensible development of architecture. The first considerations should be purely utilitarian; what sort of construction is demanded by the climate, the social habits of the inmates, and the functions the buildings are to fulfil. To think first of the style, and try to bend and warp an old one to suit the case, is to begin at the wrong end, and will only ensure another of the many disastrous architectural failures of which India has been the field. The very difficulties that present themselves in the way of using a ready-made style should be regarded as the most fruitful source of inspiration for good design. As the conditions are novel, so to the same extent no doubt will be the result. The utilitarian problem must be faced boldly and come before everything else. Whether the forms that best solve it conform to any existing style or not is of quite a secondary consequence. That they should to a certain extent regard precedent is, of course, inevitable; we cannot forget the past, but they must not be fettered by any conventional formula. Whether they will be beautiful or not will depend solely on whether the architect is a true artist or merely an engineer."



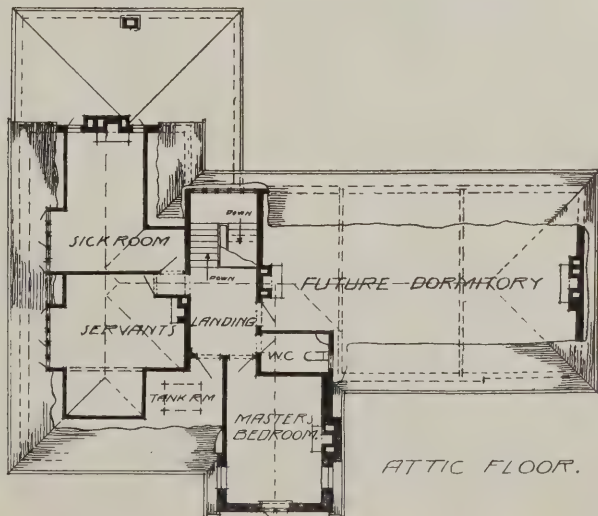
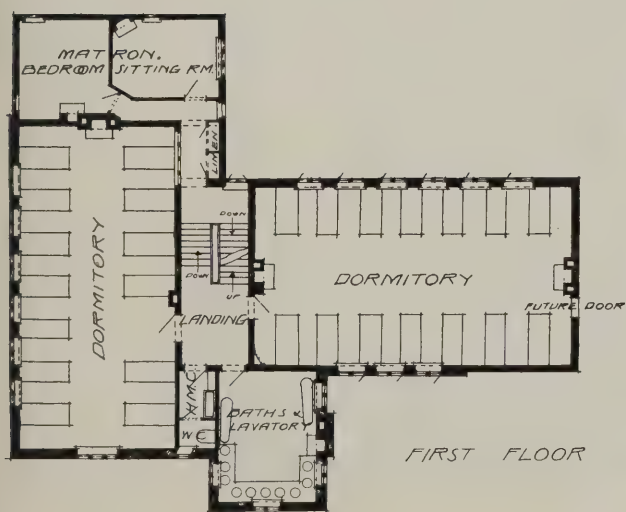
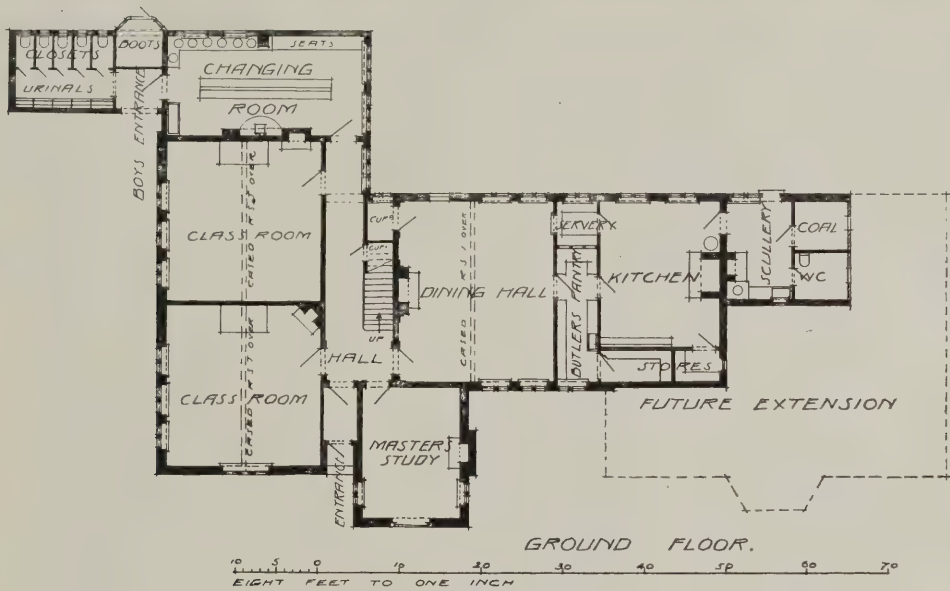
FRAGMENTS FROM TRAJAN'S COLUMN AND THE FORUM OF TRAJAN, ROME.

RESTORATION BY J. A. TOURNAIRE AND M. LAMBERT.



RESTORATION OF ARCHITECTURAL FRAGMENTS FROM POMPEII

BY E. PAULIN.



PREPARATORY SCHOOL, BISHOP'S STORTFORD COLLEGE, HERTS.

H. G. IBBERSON, F.R.I.B.A., ARCHITECT.

This school is planned to accommodate eventually 40 boys, and the rooms are arranged to admit of a master's house being easily added. The materials used are local red hand-made bricks and tiles, with flint and stone as enrichments. All external woodwork is of oak. The building was carried out by Messrs. J. Day & Son, of Bishop's Stortford, under the superintendence of Mr. Ibberson, the College architect.

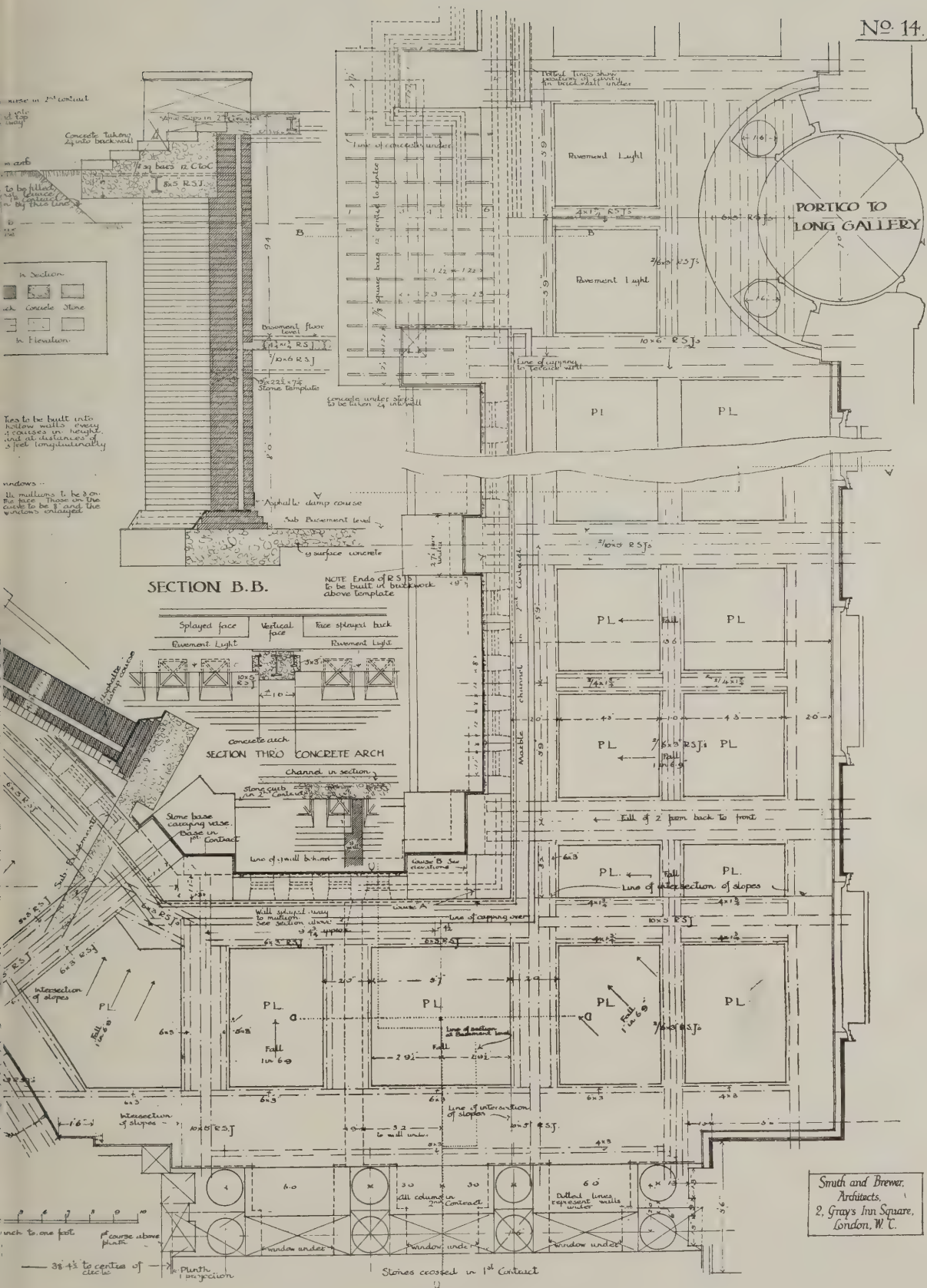


DETAIL OF STAIRCASE, ASHBURNHAM HOUSE, WESTMINSTER.

Ashburnham House, built originally for John Ashburnham, groom to the bedchamber of Charles the First, is now a part of Westminster School, entered from Dean's Yard. It is generally assigned to Inigo Jones, but was probably designed by him and carried out by Webb between 1650 and 1660. The staircase is the most interesting feature of the building, being excellent alike in its planning and detail; it leads up to the library on the first floor. The balustrade is in oak, and the newel post is painted white.

DETAILS OF TERRACE,
ETC.





THE NATIONAL MUSEUM OF WALES, CATHAYS PARK, CARDIFF.

B.A., ARCHITECTS.

THE NEWER VIEW OF THE INTERCEPTING TRAP.

The report of the Departmental Committee appointed by the President of the Local Government Board to inquire and report with regard to the use of the intercepting trap in house drains deserves the close attention of the municipal engineer, and may be usefully discussed. It is probable that as a result of the evidence brought forward the Local Government Board will alter their Model By-Laws to the extent of permitting, or even of demanding, the omission of intercepting traps in house drains. It is not the author's object, said Mr. H. C. H. Shenton, in a paper read at the annual general meeting of the Institution of Municipal Engineers, to review the report, but merely to start a discussion among members of the municipal engineering profession, who collectively must possess far more knowledge of the subject than any other body of men.

The Specialist Standpoint.

The sanitary expert and the engineer in private practice view the matter from a special standpoint. Their knowledge is to a great extent limited to the drainage of the better-class houses, and they have, as a rule, a very limited knowledge of the conditions which exist in the mass of houses of the working classes. Neither have they the drainage of whole towns and districts under their control. They are, therefore, more likely to be surprised at the conclusions of the report than those men who have for years made a daily study of the conditions which exist in the sewers and drains of a town taken as a whole.

The private engineer who is a sanitary expert may design systems of drains perfectly, and may see to it that these are absolutely well constructed, properly ventilated and flushed. Moreover, he will very likely be able to see that they are cleaned periodically, and that they are frequently inspected. He may take special steps to avoid the troubles which are mentioned in the report. He may regard the blocking of an intercepting trap on his system as a thing never likely to occur, and, moreover, he will, without doubt, take such steps as will prevent any possibility of nuisance or danger to health, even if the trap does get clogged.

It is also quite reasonable to imagine that the owner of property who has spent so much money on his drainage system would object to allow the sewers, which are not as clean as his drains, to be ventilated through them, but such cases are the exception and not the rule. The sanitary expert is better acquainted with these cases than with the drainage system of ordinary houses, and arguments in favour of the intercepting trap which are based on the existence of the perfect system, designed regardless of cost, have practically no bearing upon the present case.

The Comparative Unimportance of Ventilation.

A considerable section of the report is devoted to the demonstration of the fact that the importance of sewer ventilation, and even of drain ventilation, is not as great as is generally imagined. Apparently there is no reason to omit the intercepting trap for the better ventilation of sewers. We are told that "If, therefore, the objection to the intercepting trap rested solely or mainly on its interference with sewer ventilation, we should be inclined to question the importance of such an objection."

It is, moreover, evident that if sewer gas is noxious, we do not want outlets close to our houses. If, on the other hand, the sewers do not require this ventilation, one great argument in favour of the abolition of the intercepting trap falls to the ground.

There also appears to be no doubt that the intercepting trap is effective, for one of the conclusions contains the statement that "it seems to be established that the trap does serve as an effectual barrier to the entry of sewer air into the house drain, which is the fundamental advantage claimed for it. It is not liable to be forced and rendered useless, as has been supposed to be the case, by pressure of air from the sewer."

There is, however, one great and absolute objection to the trap, and that is its liability to become stopped up. The evidence brought forward in the report that this is so is overwhelming, and herein lies the need for alteration in the general practice. It is unnecessary at a meeting of municipal engineers to dwell upon the dangers resulting from a stopped drain. It would, however, be interesting to receive fresh evidence from the members present as to the prevalence of the stoppage of traps.

Interceptor Trap and Sewer Rats.

There is one point with which the report deals somewhat too lightly in the author's opinion, and that is the value of the trap as a barrier against rats. The report tells us that Mr. Patten Barber gave evidence to the effect that he had seen rats chased into the inspection chamber of a drain, where they escaped into the sewer through the trap, and conversely that Mr. Woods, sanitary inspector of Willesden, saw three or four rats come up from a sewer through an intercepting trap.

The author has recently had experience in Kensington of rats coming up through holes in the ground on the sewer side of a house interceptor. The examination proved that the connection was an old brick barrel of a defective nature, through which the sewer rats came. Although it was evident that the rats came up close to the interceptor, it did not appear that they had entered the house drains. The connection has now been repaired, and it has been assumed that the trap will exclude the rats from the house drains. If rats come through traps, how is it that they are practically unknown in London houses except where the drains are untrapped? In the author's memory, in the days when intercepting traps were rare, there was another trap which was very much in evidence—viz., the domestic rat trap, which was as common then in our houses as the domestic mouse trap is now. To what is the change attributable?

Again, though the author has frequently seen rats in sewers, he has never, during twenty years' experience on and off of house drains, seen a rat on the house side of the interceptor, though in untrapped drains he has seen them.

The fact that rats have been known to pass through traps under certain conditions does not prove that the trap is, under ordinary circumstances, an ineffective barrier. For instance, cows have been known to jump over fences, cats to swim across water, fishes to pass over land, and so forth. It may be argued that the presence of rats in a tight drain, properly trapped at the gullies, is less objectionable than a blocked drain, but this presupposes that the trapped gullies are effective barriers.

If the intercepting trap is not an effective barrier, neither is the gully or water-closet trap, and there is therefore every reason to expect that where there are many rats in the sewer they will come into the houses. We know from experience that this is not so. The inefficiency of the intercepting trap as a barrier against rats, as stated in this report, is therefore a point upon which further evidence is desirable.

Acting on the Report.

Another question, and perhaps the most important of all, is the manner in which to act when it is finally established that intercepting traps are to be done away with. The Model By-laws having been altered, and the local authority having decided to act upon them, what will then be the position? Houses situated in positions far apart will have to be drained. Are these houses alone to be new points at which the sewers are to be ventilated? It may well be that in a town where there are many houses without intercepting traps, the ample ventilation given prevents the likelihood of any nuisance due to the escape of an unduly large volume of sewer gas or smell at one point; but when, say, one house drain on a long length of sewer is to be made to ventilate that sewer, may there not be a considerable nuisance at that point? It is common experience that when a new system of sewers is put into operation smells occur at unexpected points. Smell escapes and is noticeable at some open cover, and the inhabitants are not slow to complain. This is quite as likely to happen at an open cover near a vent shaft as elsewhere. Theoretical principles do not seem to prevent the inlet ventilator from acting as an outlet, or to prevent the bulk of the smell issuing at some point not intended instead of at several ventilators placed for its special accommodation. Is not the same thing very likely to occur if one or two house-vent pipes are used for sewer ventilation at houses, and may not the municipal engineer have to deal with complaints, imaginary or otherwise, from local residents who are alarmed? The author, having had considerable trouble from objections raised to purely imaginary smells from sewer vent shafts, cannot avoid the impression that there must be possibilities of trouble for the municipal engineer in the application of the new method.

Again, would it be possible to remove all the traps in the town? It would be easy to make them inoperative as traps by removing the cleaning eyes, but this would not do away with the chief danger—viz., that of stoppage.

The chief point, therefore, which the author wishes to raise for discussion is how best to apply the teachings of the report.

OUR PLATE.

A Doorway in the Royal Automobile Club.

The main club room in the Royal Automobile Club, Pall Mall, is on the west side of the building, and extends the whole depth of the site. The room has an extremely rich ceiling of fibrous plasterwork, with a griffin frieze, the latter, we believe, taken from the old War Office, which formerly occupied the site. The doorways to the club-room are flanked with columns bearing an entablature and curved pediment. They are extremely graceful in effect (as will be seen from the Centre Plate in this issue), the details being of very refined character.

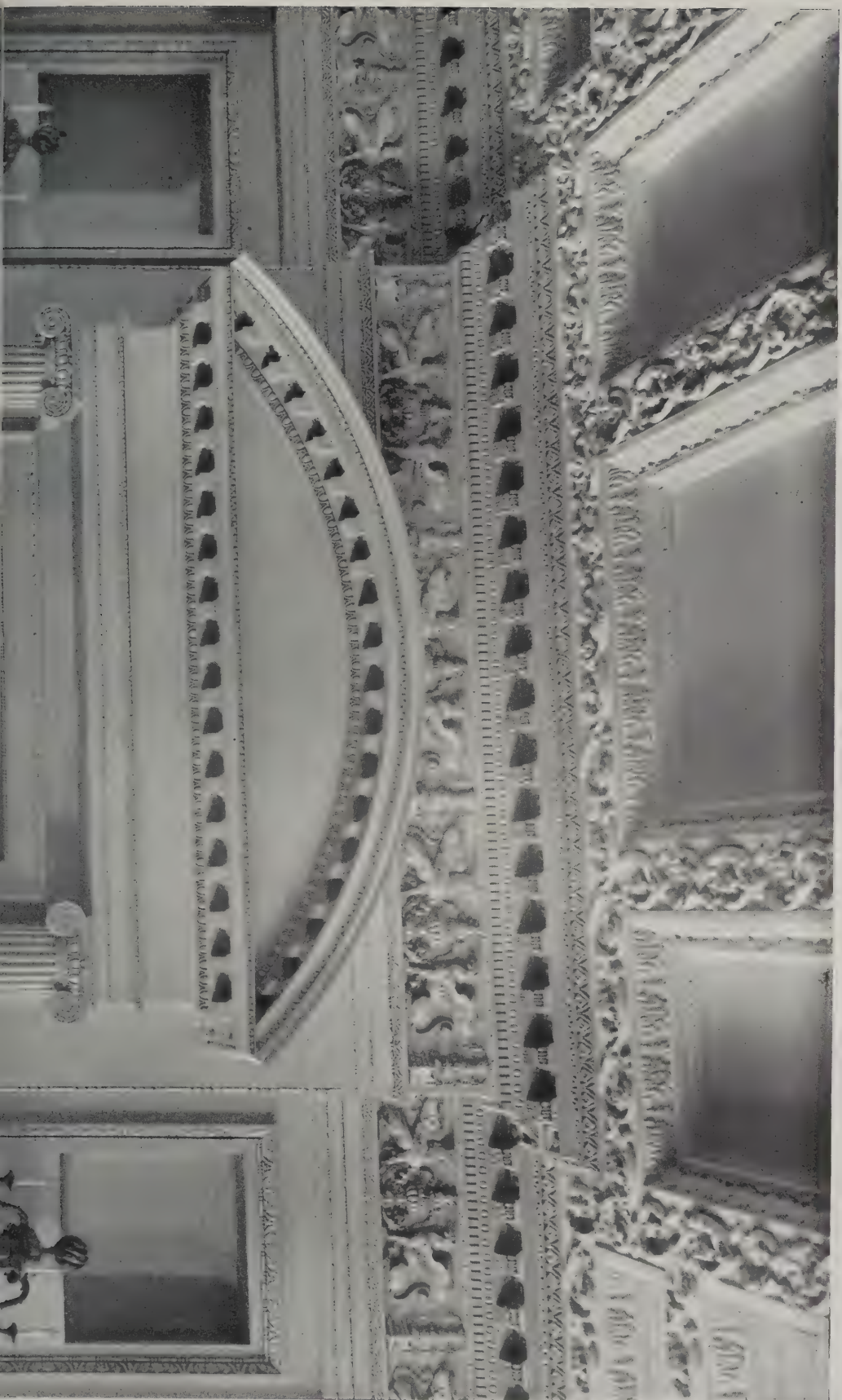


Photo: Bedford Lemere & Co.

ROYAL AUTOMOBILE CLUB, PALL MALL, LONDON: DOORWAY IN LARGE CLUB ROOM ON WEST SIDE.

MEWES AND DAVIS AND E. KEYNES PURCHASE, F.R.I.B.A., ASSOCIATED ARCHITECTS.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, October 23rd, 1912.



FIRE PREVENTION NOTES.

One heard with more than ordinary alarm last week that a fire had broken out in so inaccessible a place as East Harding Street, in the heart of the City of London. It is within that busy and rather congested area between Fetter Lane on the West, Farringdon Street on the East, Holborn on the North, and Fleet Street on the South, and as it abounds in narrow streets and tortuous alleys, some of which are wholly or partly covered over with buildings; and as, moreover, many of the buildings are survivals from the days of Dr. Johnson, or even earlier, and might therefore be expected to contain a great deal of "high-dried" woodwork, the news of the outbreak of fire in this district was regarded as a matter of the most serious importance. Probably the area is scheduled as dangerous by the fire brigade and salvage authorities, for both bodies immediately turned out in full force. The fire, however, which had broken out in the basement of Messrs. Eyre and Spottiswoode's printing establishment, was quickly subdued, and although the flames shot through the upper floors and came out at the roof, the damage is reported as being much slighter than could have been anticipated. "The woodwork of the floors and staircase," it is stated, "seems to have been but little affected, and the flames had scarcely more than scorched the edges of the stacks of paper piled on the benches." The behaviour of the stacks of paper is not greatly surprising. Although nothing could well be more inflammable than a sheet of paper, a stack of such sheets does not easily take fire. The writer has seen such stacks scarcely more than scorched after a complete burn-out. On the other hand, if, as commonly happens, a stack is thrown over, and is attacked by the fire in sections, it makes smouldering masses that are most difficult to extinguish.

What is the fire at East Harding Street originated in a manner that seems to us to be quite incredible: "Over-heating"? In the basement there is a furnace used for melting stereotype metal. It was in the basement that the fire originated, and it is assumed that the furnace became overheated and ignited some woodwork near which it was placed." As we have found previous occasion to point out, due allowance must always be made for the conditions under which fires are reported for the daily papers. It is a convention that the reporter shall always hazard a conjecture as to the origin of the outbreak, and in the circumstances it is not surprising that the guess is more often wrong than right. The "overheating" of a furnace, or a boiler, or a flue, is a favourite expression, perhaps because of its vagueness. What is the degree at which a smelting furnace becomes "overheated"? And how came the woodwork to be near enough to suffer from this exaggeration of function? The presence of inflammable woodwork *in situ* near a furnace in a stereotyping foundry is simply unbelievable, whether or not the "overheating" of the furnace is a possibility. Nevertheless, the mere fact that such a statement would not strike the average reader as being altogether beyond credence has its significance. The inspection of buildings with regard to fire hazard being based on a very imperfect realisation by the general public of its duties and responsibilities in

the matter of fire-prevention, the usefulness of the officials who inspect buildings is heavily discounted. They see many dangers which they have no authority to prevent. Even if they were invested with fuller powers, there would always be the impracticability of administration. Better than the creation of an army of officials armed with warrants of search for fire-hazards, is the creation of a more enlightened public opinion on the subject of fire-prevention, to the intent that every good citizen will not only feel morally bound to take every means in his power to prevent fire, but will take care to make himself acquainted with the means of protection, and, so far from opposing his architect's use of them, will insist that they shall be adopted.

In an article that recently appeared in the "Times" on "Fire Losses in the United States," the writer recalls that the largest fires in the history of the country have been as follows: Chicago (1871), Boston (1872), Baltimore (1904), and San Francisco (1906). It is almost paradoxical to state that the country in which the loss by fire is more than five times greater (measuring it in cents per head of the population, it is 251 per capita in the United States against 48 in Europe) than it is elsewhere, should show the greatest efficiency in the fire-protection of buildings. Of course, this is really no paradox, but a mere sequence of cause and effect; the fires being so numerous, the utmost ingenuity has been expended on efforts to avert them. What is more, these efforts have been, beyond question, extremely successful. "It is the low quality of the average home that is so distressing to the American building reformers, not the failure of the home that really aims at indestructibility." The concrete house the writer quoted records, has been established as one of the permanent types. This is true also of the house of hollow tile, which until a few years ago was used only for a supplementary fireproof material in business structures. In the suburbs of the large Eastern cities the two materials are now often used in combination, the walls being made of tile and the floors of reinforced concrete beams with courses of tile between them. Not long ago a wealthy New Yorker put up a country house in which steel beams were used in the floors and roof. Such combinations give as great a degree of safety against fire as is possible to any house containing furniture and decorations and other inflammable matter. Some very enthusiastic fire-protectionists have gone so far as to have the interiors of their dwellings trimmed with metal or so-called fire-proofed wood.

This is the right spirit, but perhaps not altogether the right method. Steel beams in floor and roof one associates with the factory and the warehouse rather than with the home, where they seem hardly necessary for the prevention of fire, and where, in case of a severe outbreak, their chief effect might be to pull the house to pieces by twisting and contorting in the heat. But perhaps they are sufficiently embedded to prevent this as well as to conceal their presence in the building, so that they would destroy neither the home itself nor the home feeling. With regard to internal metal trimmings for the home, it seems to be quite unnecessary to go to such lengths. Metal

is an uncomfortable substance to touch or to look at, and less stern but not less fire-resisting "trimmings" are available in plenty. The "so-called fire-proofed wood" is almost equally efficient for offering all the resistance that can be reasonably required of "trimmings"—namely, non-ignition from contact with sparks, with glowing cigarette or cigar-ends, or with a small flame, such as the blaze of a lucifer match. To be capable of this service, the wood may be either covered with some kind of "fireproof paint," compounded of such chemicals as sodium salts, gypsum, and the silicates, with a "binder" of casein or glue; or it may be cut from timber which has been subjected to some process similar to that in which, the sap, resin, and germs having been withdrawn, forms of ammonia are injected. But nowadays there is, in addition to fire-resisting wood, a wide choice of fire-resisting materials with which the interior of a dwelling, or any other interior, may be quite elegantly fitted.

NEWS ITEMS.

A Memorial Tablet.

A bronze tablet to the memory of the late Alderman John Somerville was unveiled in St. James's (Church of Scotland), East Dulwich, S.E., on Sunday, October 13th, by the Mayor of Camberwell (Alderman W. Brechley, J.P.). The tablet, which is late Gothic in style, was modelled and cast by Messrs. H. W. Cashmore and Co., of 96, Victoria Street, S.W., from the design and details of Mr. A. J. Clifford Ewen, Licentiate R.I.B.A., of East Dulwich.

New Science School, Bradfield College.

Sir William Osler opened at Bradfield College last week a new science school, which has been built at a cost of £4,000. The new school is a detached brick building with stone and flint dressings, and the architect, Mr. C. Steward Smith, of Reading, has harmonised the design with the general idea of the older school buildings. The accommodation consists of four laboratories—two for chemistry and two for physics—with a central lecture-room common to all the laboratories, in which forty boys can be seated. Though it is not intended that the laboratory classes shall exceed sixteen, the laboratories are large rooms, and there is ample space round the tables. Besides chemistry and physics, occasional work will be done in botany and biology.

Free Lectures on Reinforced Concrete.

A course of six educational lectures on "Concrete, Its Properties and Manufacture," will be given by Mr. H. Kempton Dyson, secretary of the Concrete Institute, at 5.30 p.m. on Tuesdays, November 12th, 19th, 26th, December 3rd, 10th, and 17th, 1912, in the Lecture Hall of the Concrete Institute, at Denison House, 296, Vauxhall Bridge Road, Westminster (close to Victoria Station). The lectures will be of approximately one hour's duration and will be illustrated by diagrams, photographs, specimens, and apparatus. There is no fee for the course; admission will be by ticket, obtainable on application from the secretary.

American Fire Losses in September.

Losses by fire in the United States and Canada during September aggregated \$13,779,300 (£2,955,860); as against \$11,333,250 (£2,266,650) in the corresponding month a year ago and \$11,700,000

ARCHITECTURAL STUDENTS' SECTION.

Under this heading a special contributor, eminent both as an architect and as an educationist, will furnish information on matters relating to architectural design, education. Advice will be willingly accorded to those who seek help in their studies; questions relating to construction, or to matters which can be easily settled by reference to the ordinary text-books, cannot be considered.

British School at Rome Scholarship.

R. S. (Halifax) writes: "Can you tell me who is eligible to compete for the school at Rome scholarship, and when is the examination?"

—Any British subject under thirty years of age is eligible to compete. The subject for the preliminary examination will be issued at the beginning of next month, and a month will be given in which to work it out. Anyone wishing to compete should write to the Secretary of the British School at Rome, 54, Victoria Street, London, S.W., giving him his address so that the subject of the first preliminary examination may be sent to him as soon as to anyone else.

From the results of this examination a selection of candidates will be made for the second examination, and these will finally be reduced to ten, who will work out a problem in separate cubicles at the Institute. Four students from each of the recognised schools—Liverpool, Manchester, Sheffield, Edinburgh, Glasgow, and the London schools—may be nominated for exemption from the preliminary round.

The Office and the Architectural School.

C. O. D. (Manchester) writes: "I am just finishing my articles, and very much regret I did not go to a school of architecture before starting them. Do you think it would be waste of time for me to join a school now; and if so, which?"

—A great number of young men, especially in the North of England, are finding they have made a similar mistake to C. O. D.; with the Institute examinations increasing in difficulty each year and taking more and more account of design, their numbers will continue to increase. Parents do not seem to make sufficient inquiries. Schools of architecture are still comparatively new institutions, and the architect friend to whom the parent applies, not having been to one himself, probably does not realise their value. The existence of the premium system, which is dying out in London and has never existed in America, is apt to prejudice the question. The provincial architect, without being a Pecksniff, looks to make a modicum of his income from premium pupils. He has paid a premium in the past to learn his trade, and he does not see why those following him should not do the same. All this, however, is no proof that the premium pupil system is the better. It has been given up in the medical profession, where once it flourished, as it still does with us. It seems ridiculous now to think of the country doctor, or the town doctor for the matter of that, pretending that he could in the intervals of a busy practice teach a pupil the whole art of medicine. It is hardly less ridiculous in modern architecture. It was possible, in the days when a great tradition reigned throughout the land and when architecture meant one style of building and one only, for a student to learn that style from the practice of a master. In these days, however, of eclectic design and commercial practice, the ordinarily busy architect has very little time to devote to his pupils. They have the run of the office and that is all. They

pick up what they can from the paid assistants. As the young gentlemen of the office from whom little serious work is expected, they can generally amuse themselves as they like, and that amusement does not always take the form of serious study of general principles. How could it? In an office there is no time for general principles, only time for practical details. That is why the principles should be learnt in a school and the practical details in office, and why the Royal Institute recommends a combined course, first of school and then of office.

C. O. D.'s question, however, whether it would be waste of time for him to go back to a school after finishing his articles. My answer to that would be Certainly not. It would be anything but a waste of time, especially if he chose a school like Liverpool, or the Architectural Association School, where opportunities are offered for advanced work. The man from an office does not want to stop measuring up the studio or making diagrams of brick bonds like the man straight from school. He wants to practise draughtsmanship, and at design and draughtsmanship, this is just what a school whose curriculum consists in a series of design problems can give him. Such a man would therefore start straight away on second year work. An arrangement to permit of this has recently been made at Liverpool, and I have no doubt that the other schools of similar opportunities. I am told that at Liverpool 75 per cent. of the students have already been in offices. We have often wondered at the standard of design and draughtsmanship the students of the school reach in their second year and the fact no doubt partially accounts for it. We know that men coming to the school from country offices have, after a year or two in it, obtained first-class assistantships in good London offices. It is natural that the men who can render and shade a large drawing, who know classical detail and can set up their orders correctly, should be of value whenever a big competition comes along.

C. O. D. apparently lives in Manchester. The school there has recently appointed a new head in Professor Dickie, late of the Architectural Association School in London—an accomplished draughtsman and designer. Under his instruction C. O. D. would be very wise to spend a year studying design. The fees in the northern schools of architecture vary from £25 to £30 a year, in the London schools from £40 to £45.

D. W. N. (London, S.W.).—By a coincidence that, curiously enough, is by no means uncommon, your question is almost identical with that of C. O. D. (Manchester), the reply to whom is therefore exactly applicable to your own case, except, of course, the last paragraph, which relates to locality. I would advise you to get into touch immediately with the Architectural Association School of Architecture, in Tufton Street, Westminster. The point not touched upon in the answer to C. O. D. and really self-evident, is the high social and educational value mingling with one's fellows.

(£2,340,000) in September, 1910. The fires last month were well distributed throughout the country, although Pacific Coast States furnished rather more than their share, the largest fire in that section having been that at Ocean Park, Cal., which destroyed property at the amusement resort to the value of \$1,125,000. The fire losses since January 1st this year total \$117,529,950, or about a million and a half less than in the first nine months of 1911, but over \$18,000,000 more than during the corresponding period of 1910, when the losses were reported at \$159,347,300. The highest damage recorded for the month was \$1,125,000, arising from the burning of an hotel, a casino, and stores at Ocean Park, California. In all, there were 255 fires in which the property damage was estimated at ten thousand dollars or more in each instance.

The Liverpool Custom House Site.

The scheme for erecting a Custom House on the site chosen at St. George's Dock has been abandoned, the site having been purchased from Messrs. Cubitt and Co. by the Cunard Company, who intend to cover it with their own office buildings. Liverpool is thus deprived of an ideal river-front site for its Custom House. A Custom House that shall be worthy of the city must, however, be erected, and a satisfactory site for it must be provided; but the loss of the ideal site will be a source of lasting regret.

A New Critical History of Architecture.

We are informed that Mr. B. T. Batsford will publish immediately "A Short Critical History of Architecture," by Mr. H. H. Statham, F.R.I.B.A. It is realised that to-day every person of culture is desirous of having the same acquaintance with architecture that is deemed essential with regard to history, painting, or music, and Mr. Statham's book has been specially written with the object of imparting or increasing such knowledge. Thus the work, which is profusely illustrated with photographs and drawings, gives a concise history of the development of architecture in such a manner as to render it not a mere statement of facts, but a critical commentary on the merits and weaknesses of the styles and buildings described and illustrated.

Modelling St. Paul's Cathedral.

Mr. Henry Hill, of South Kirby, near Mexborough, has modelled a faithful replica of St. Paul's Cathedral. It contains 3,500 pieces of wood, 2½ lb. of lead on roofs, 4,550 painted parts on opal floor (1,250 in dome circle alone), 156 painted stained-glass windows, 500 dolls to represent service, and 500 pilasters and pillars. The interior is decorated with 10,350 bead mosaic pieces; walls of coloured marble; marble monuments to Lord Nelson, Wellington, and seventy others in the crypt; five gardens, with bead mosaic flowerbeds; electric fountain; stone geometrical staircase; library; model trophy room, belfry, peal of twelve bells, block, twelve coloured marbles in pavement, twenty-three Caen stone steps, thirty-one red Carlisle stone pillars, and Queen Anne's statue on west front; also the high altar and reredos in marble, with opal steps, painted in oils. The interior and exterior are illuminated by thirty electric lamps. An organ has been specially made for this model in Switzerland. The model took four years to study and design, and two years to make.

SOCIETIES AND INSTITUTIONS.

THE SOCIETY OF ARCHITECTS.

Annual Report.

In the twenty-eighth annual report of the Society of Architects, for the year 1911-12, the Council recall, with regard to the registration of architects, that early in the session the Council of the Royal Institute of British Architects, after further consultation with the representatives of the Council of the Society, drafted a new supplemental charter and by-laws to enable the arrangements previously provisionally agreed upon to be carried into effect, and in January last a special general meeting of the Royal Institute was held to consider the question of applying for a new supplemental charter and by-laws to authorise the Council of the Royal Institute to enter into a conditional agreement with the Council of the Society of Architects. A copy of these documents and the explanatory statement of policy drawn up by the Royal Institute and submitted to their members was at the same time sent to the members of the Society for their information. At this meeting the whole matter was referred back to the Council of the Royal Institute, who thereupon appointed a committee to consider and report upon the subject. It is understood that this committee has held a number of meetings, and that from time to time it has been reconstituted or strengthened, but up to the present the results of its deliberations have not been made known to the Council of the Society.

This Council had already decided that the routine work of the Society should continue without reference to the negotiations proceeding between the two Councils, and they have now decided to also take up the registration question and to resume activities at the point at which they were temporarily suspended two years ago pending the negotiations referred to. Steps are therefore being taken to reintroduce the Society's Registration Bill during the next session of Parliament.

It is further recorded that the membership of the South African branch now stands at forty-one, and there is every indication of further extension in this direction in the near future. With regard to the progress of registration in South Africa, it is understood that the proposed new Union Bill will be presented to Parliament next session, or as soon as the members of the various architectural bodies interested have agreed on the clauses of the Bill.

Turning to the students' section of the Society, the Council record that efforts have been made during the session to develop this section with a view to adding to its scope and numbers. A projected series of discussions had to be discontinued, but quarterly competitions were inaugurated and resulted in some excellent work being submitted. Sketching visits were again attempted, but had to be abandoned owing to insufficient support. The large majority of students, who now number two hundred and thirty-six, reside in the country, and are therefore debarred to a large extent from taking part in meetings in London.

The General Purposes Committee has been principally engaged in carrying out an instruction from the Council to embody in the articles of association the scheme adopted by the Council for reorganising the students' section and examinations,

etc., and in considering and reporting upon the desirability or otherwise of amplifying or revising the articles in other directions in order to better meet the present requirements of the Society and to provide for future developments. The following are the chief revisions proposed: The new articles will (*inter alia*) define more fully the qualifications and privileges of honorary and retired members, members, graduates, and students. Graduates will be a new class, examined only in design and general culture, the object being to eliminate students who show no real aptitude for the profession. The age limit for direct membership is to be raised from twenty-eight to thirty years, and the method of election of members, etc., is to be by show of hands unless a ballot is demanded. Honorary members, graduates, and students are to be elected by the Council. It is proposed to make the certificate of membership renewable from year to year and to suspend from privileges a member who has not renewed his certificate by March 31st, or if not renewed by June 30th to exclude him subject to his having power to apply for reinstatement if the renewal is made before September 1st. There is to be a special general meeting in October for the election of officers, etc., it being proposed that the annual general meeting for consideration of the report and balance-sheet shall be held at a later date, so that both may be presented together. The powers of the Council are to be widened in regard to dealing with any alleged breach of professional etiquette, if called upon to do so. The Council have co-operated with the R.I.B.A. in a number of cases where the conditions of public architectural competitions have been considered unsatisfactory by notifying the members and requested them not to compete, which request the Council has reason to believe has been loyally complied with; and a considerable number of cases on points of practice have been received and dealt with by the committee.

The question of forming a board of professional defence for the purpose of advising and if necessary assisting members in cases involving matters of general professional interest to the profession on points of practice has been carefully considered, and with this object an advisory committee has been formed, while an adequate sum has been earmarked to form the nucleus of a defence fund for use when necessary in forwarding the objects of professional defence. Cases submitted to the secretary will be brought before the board, who will advise the Council on the merits, and if the interests involved are of such importance to the profession generally as to warrant any action being taken by the Society as a corporate body the board will further advise the Council as to what course the Society should follow.

The membership of the Society in 1912 was 1,214. The Council have adopted a scheme for grading the membership, having in view the time when examination will be the only test of qualification for admittance to the Society. The Society is to consist of students, graduates, and members. Suggestions for a set of regulations or code of professional ethics have been drawn up and distributed to the members for their consideration.

The whole of the Society's examination scheme is under revision, and in due

course there will be two examinations, one for admission as graduates, and the other for admission as members. The details of the scheme are in the hands of the committee and will be published in due course.

It is noted that since the last annual meeting the Copyright Act has become law, and so far as the Council are able to judge it would appear that the general effect of the Act is to entitle architecture to the same recognition and protection as painting and sculpture, as artistic work. The advantages of the Act to the architect are (*inter alia*) that to some extent it settles the question of the ownership of his own drawings, which are also protected from unlicensed copying, and cannot be used over again for another building. The copyright is, however, vested in the building owner, and passes to the client unless granted to the architect by agreement between the parties, and it would seem that unless this is done or the building can be shown to be a work of art there is no protection against its being reproduced. Also while damages can be claimed for infringement of copyright, an injunction to restrain the erection of a building or an order for its demolition cannot be obtained once the building has been commenced.

The Council have had under consideration a proposal for introducing into England a system of education on similar lines to the Ateliers of the Ecole des Beaux Arts, in Paris, and, being of opinion that it is desirable to extend this system in England, have appointed a committee to confer with educationists on the subject and report in due course.

ARCHITECTURAL CRAFTSMEN'S
SOCIETY, GLASGOW.*Scottish Architecture.*

At last week's meeting of the Glasgow Technical College Architectural Craftsmen's Society, Mr. A. N. Paterson, A.R.S.A., F.R.I.B.A., delivered a lecture on "Scottish Architecture of the Fifteenth to Seventeenth Century." He referred to the usefulness of the study of architecture towards an understanding of the history and character of a nation. In the case of Scottish architecture, the influence of national life and thought, and, at the same time, of the close relationship with France, was not so evident as might have been expected. An analysis of the earlier history of Scotland, together with a discrimination between Scottish architecture and architecture in Scotland, showed why this should be the case, and that in fact no approach to an indigenous style existed in the country until the fifteenth century. All building during the Middle Ages was towards one of two ends—ecclesiastical or military. He showed the emergence of a Scottish style in church building towards the close of this period, with special reference to the French characteristics displayed in it, as illustrated by such examples as Glasgow, Dunkeld, and Iona Cathedrals, and the parish and collegiate churches of St. Monan's, St. John the Baptist, Perth, Rosslyn, etc.

Interest was transferred from church to house building by the beginning of the sixteenth century. In France and Scotland domestic architecture was a direct development from the military type of earlier days; while in England this was

departed from in favour of the manor houses. The Scottish house of the fifteenth to the seventeenth century was described, its origin traced to the peel tower, with a description of that, and the special features in plan and design which were grafted upon it; the L and Z types of distribution, crowsteps and corbelling of gables and turrets, with illustrations from Preston Tower, Hunterston, and other early examples, and many later variations of the sixteenth and early seventeenth centuries. The Renaissance influence reached Scotland through France; the first evidences were in the Royal palaces of Stirling and Falkland. Under James V. it was slowly adopted in later work till, with the union of the Crowns, the French influence was submerged in that of the English Palladian, as evidenced in the work of Kinross and the elder Adam, to disappear almost entirely in the following century.—F. DAVIS, joint secretary.

BRISTOL SOCIETY OF ARCHITECTS.

The Bristol Society of Architects opened their winter session last week with a conversation at Church House, Clifton, the residence of the president, Mr. G. H. Oatley, F.R.I.B.A. Amongst those who availed themselves of the president's kind invitation were Messrs. J. Foster Wood, F.R.I.B.A., and Mowbray A. Green, F.R.I.B.A., vice-presidents; Messrs. G. C. Awdry, F.R.I.B.A., W. L. Bernard, F.R.I.B.A., G. C. Lawrence, A.R.I.B.A., T. H. Weston, F.R.I.B.A., Austin B. Botterill, A.R.I.B.A., and B. Wakefield, Lic.R.I.B.A., members of the Council; Messrs. C. D. Ruding Bryan, J. H. Cavell, J. R. Edwards, E. H. Gibbs, A. R. Gough, A.R.I.B.A., A. Harford, C. A. Rowley, Lic.R.I.B.A., C. E. Skinner, T. H. Skinner, J. H. La Trobe, F.R.I.B.A., and C. F. W. Dening, Lic.R.I.B.A. (hon. secretary). During the evening a number of sketches and photographs—the outcome of the Saturday afternoon sketching tours—were on exhibition, and Mr. Harvey Pridham lent a number of his drawings of Gloucestershire fonts.

LONDON MASTER BUILDERS' ASSOCIATION.

The council of the London Master Builders' Association met on October 17th, the chair being occupied by Mr. James S. Holliday, president.

The special committee appointed to confer with the representatives of the various trade organisations submitted its reports of the several conferences which had been held, which were unanimously adopted.

Reports of the Conciliation Board meetings were received.

Correspondence relating to trade matters was read.

Messrs. T. W. Helsden and Sons, Lisson Grove, N.W., were elected ordinary members and the nomination of Mr. H. C. Horswill, Forest Gate, E., as ordinary member was accepted.

COMPETITIONS.

Cheshunt College, Cambridge.

The Governors of Cheshunt College met recently to decide the question of plans for their new building at Cambridge. The college was founded by Selina Countess of

Huntingdon at Talgarth, South Wales, in 1768. It was transferred to Cheshunt in 1792, and later became one of the divinity schools of the University of London. It was moved to temporary premises at Cambridge in 1905-6. After engaging the services of Sir Aston Webb, R.A., as assessor, they invited eight architects to compete in the preparation of designs. As the result of an exhaustive examination of the plans and sketches, the assessor decided in favour of those prepared by Mr. P. Morley Horder, F.R.I.B.A. The Governors unanimously endorsed Sir Aston Webb's opinion, being convinced that Mr. Horder had fulfilled as nearly as possible the requirements which they had in view. The drawings represent buildings of a simple, modern type, and in keeping with surrounding colleges. The arrangement of buildings on the two acres of ground was considered to have been admirably carried out, and care has been taken to preserve the picturesqueness of the site. The premises include a chapel, a hall for meetings, and houses for the president and the resident tutor. It is estimated that the cost of carrying out the design will reach at least £20,000. It is intended to begin building in the early spring, and to open the new college in the autumn of 1914.

THE REFACING OF BUCKINGHAM PALACE.

In the House of Commons last week, Mr. Wedgwood Benn, M.P., representing the First Commissioner of Works, informed Mr. King that the First Commissioner had accepted on behalf of the Government the offer of the Queen Victoria Memorial Committee to reface the front of Buckingham Palace. The architect would be Sir Aston Webb. The plans, which he would be happy to exhibit in the tea-room of the House, involved little more than the refacing of the front of the Palace with Portland stone.

Mr. Pretymann asked: Would it not be possible to use the same stone as the other front of the Palace is built with, which is, perhaps, the most beautiful stone in London, and which has stood the test of a great many years? Mr. Benn replied: I will convey that suggestion to the committee.

We are informed that the order for the Portland stone required in the refacing of Buckingham Palace (about 75,000 ft. cube) has been given to Mr. F. J. Barnes, of the Portland Stone Quarries, Isle of Portland, Dorset.

Referring to a note on the "Refacing of Buckingham Palace," on page 400 of our issue for October 16th, Messrs. Edmeston and Gabriel point out that the attribution of the Mall scheme to Sir Aston Webb should be modified in the light of a letter in which Sir Thomas Brock states that every line of the Victoria Memorial was designed by himself. Sir Thomas's letter was not published until after we had gone to press. Our correspondents also criticise a news item on page 423, which they construe as a claim that a school at Wood Green is "one of the first examples of its kind in this country" because it is of one storey. This is not the interpretation we had put upon the paragraph. Knowing that one-storey schools are quite common, we inferred some novelty in planning or materials. We are nevertheless obliged to our correspondents for the keenness of their interest in the JOURNAL, and for their acknowledgment that "the information you give your readers is usually correct."

HENRY HOPE AND SONS, LTD.: NE ISSUE OF PREFERENCE SHARES

Messrs. Henry Hope and Sons, Ltd. announce a new issue of 10,000 Five and Half per Cent. Cumulative Preference shares of £1 each at par, to rank *par passu* in every respect with those already issued. The company was formed in June, 1898, to take over the business which had been carried on at 55, Lionel Street, Birmingham, since 1818, for the manufacture of steel and gunmetal windows and casements, leaded glass, steel sashes, factories, patent glass roofing, heating and ventilating apparatus, door and cabinet hardware, cast lead work, etc. It is intended that the proceeds of this issue should be used for the further extension of the works and plant at Smethwick, to enable the company to deal with its largely increasing trade. Rapidly increasing trade with the Colonies and foreign countries is reported, in addition to "a very valuable connection with the majority of the leading architects and engineers in the British Isles." In the prospectus many examples of extensive recent contracts at home and abroad are cited, including work at the Royal Liver building, Liverpool, the Calcutta Printers' Association new offices at Manchester, and important buildings in New York, San Francisco, Montreal, Toronto, Corea, Rangoon, Cape Town, Melbourne, Australia, and New Zealand. Since 1905 10 per cent. has been paid on the company's Ordinary shares. The subscription list closes on October 24th. Lloyds Bank, Ltd., Colmore Row, Birmingham, and other branches, are authorised to receive subscriptions, and the registered offices of the company are at 55, Lionel Street, Birmingham.

COMING EVENTS.

Wednesday, October 23.
Manchester Society of Architects.—Paper by Mr. Halsey Ricardo, F.R.I.B.A.

Thursday, October 24.
Sheffield Society of Architects and Surveyors.—Mr. F. Radcliffe on "The Use and Misuse of Materials" (Students' Meeting.)

Architectural Association (Camera, Sketching and Debate Club). Mr. L. Marshall Phillips on "Craftsmanship and Architecture," at 8 p.m.

Friday, October 25.
Birmingham Architectural Association. Smoking Concert and Exhibition of Drawings.

Saturday, October 26.
Royal Sanitary Institute.—Provincial Sessional Meeting at Alton.

Monday, October 28.
Architectural Association.—Mr. Lawrence Weaver, Hon. A.R.I.B.A., on "Small Country Houses of To-Day," at 8 p.m.

Manchester Society of Architects.—Mr. Halsey Ricardo, F.R.I.B.A., on "Growth in Architecture."

Friday, November 1.
Birmingham Architectural Association.—Mr. George H. Oatley, F.R.I.B.A., on "Fountains Abbey."

Monday, November 4.
Royal Institute of British Architects.—Presidential Address by Professor Reginald Blomfield, A.R.A., at 8 p.m.

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(From Piranesi.)

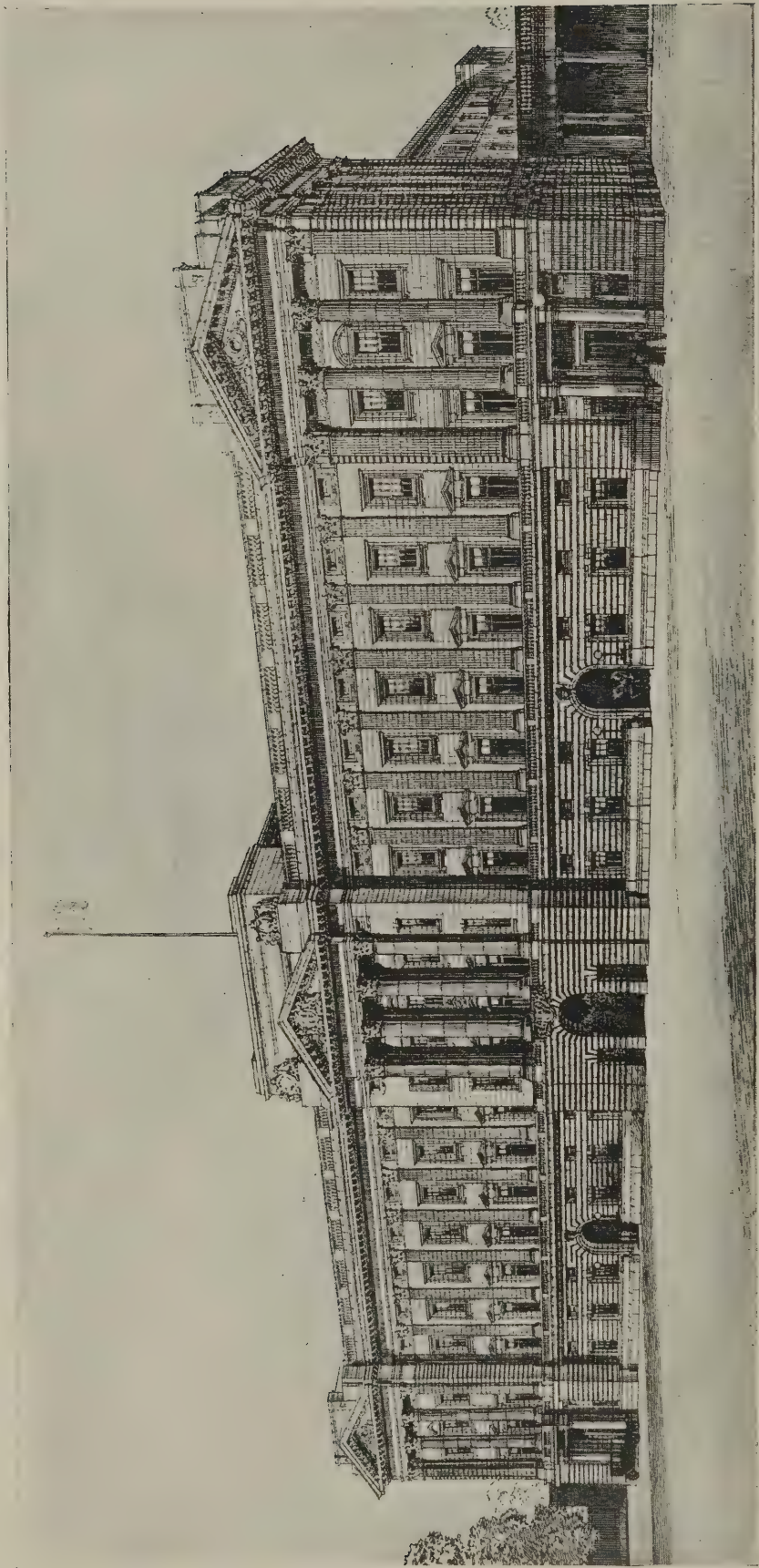


Photo: Central News.

THE NEW FRONT TO BUCKINGHAM PALACE. SIR ASTON WEBB, C.B., C.V.O., R.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

OCTOBER 30th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 928.

Tradition in Architecture.

TAKing Johnson's definition of tradition—"anything delivered orally from age to age"—it is to be noticed that this emphasises two conditions—(1) that it shall not be written and (2) that it shall be a continuous process. Tradition in architecture, then, the method of working which has been handed down from father to son; it is the application of those principles which form, or, rather, should form, the groundwork of the training given by the master to his apprentices, to be passed on by them to their successors.

It is of the very essence of tradition that it shall be the common property and inheritance of the whole body of artificers, from the designer, or master-mind, who originates, to the humblest artisan who helps to construct the building. The designer, if of outstanding ability, may, by adopting a new material, or by devising a daring piece of construction, advance a little forward beyond his predecessors; but it is always upon the same path, and those working under him are able to follow easily and naturally in his footsteps. It is difficult to over-estimate the advantage of this: its importance lies in the sense of power and self-reliance which such a steadily growing authority gives to a community, all the members of which are able to express themselves simply and naturally in the same language—for architecture is speech materialised. Unfortunately it is impossible to realise this advantage at the present day, for, as a nation, we may be said to be without tradition. It has been destroyed by the archaeologist. But it died hard, tradition being wonderfully tenacious and long-lived; invasion and conquest will not kill it; indeed, in such cases the tradition of the two nations has almost invariably coalesced; and in some instances even the tradition of the conquered has maintained its supremacy. It is worthy of note that the Jews, who had no genius for architecture, were apparently only employed by the Egyptians as quarrymen and carriers of stone and makers of bricks; if they had been better architects they might perhaps have fared better.

It seems, therefore, that a new phase of living architecture is evolved only from the combination of two or more traditions; it cannot spring, Minerva-born, from a single brain. All European architecture may be said to have had a common Roman tradition. The Romanesque, the Lombardic, the Byzantine, and the Norman were moulded from this common stock into different forms by the local genius of the builders. One cannot help regretting that some one part of the Roman Empire did not adhere to the pagan religion, so that we could go to, say, Naples, and see what had resulted from that tradition being handed down, unbroken and uninfluenced, to the present day. We must turn to another form of design for a parallel. Take shipbuilding. The coasting brig which is launched from the Tyne to-day is the direct descendant of the Norse Viking ship. Its spars, its ropes and appliances, are more numerous, more complicated, and, we may suppose, more efficient—that is the result

of 1,500 years of intelligent development, but the main structure remains the same.

In England, through the Middle Ages, the differences which we notice are simply due to the greater technical skill in the later periods. By successive experiments, not always successful, the men of the fourteenth and fifteenth centuries had achieved such command over their material that they created structures which would have excited the wonder of the men of the thirteenth century, though they followed logically from the teaching of the latter. The Renaissance changed all this; it was a forced growth; the artisan was not in sympathy with it—it was an endeavour to make him speak not merely a foreign but a dead language; it was, indeed, "Greek" to him; and, in the endeavour to learn it, he deadened the expressive idiom of his own vernacular speech. Yet tradition was not quite destroyed. Through the reigns of Queen Anne and the earlier Georges a village carpenter could still be trusted to express himself clearly, intelligently, and with some style, so that there is scarcely a village which does not possess work of this period that is interesting and worthy of attention, and which, there is no reason to doubt, was thought out and done by the artisan without supervision.

Then came the period of revivals. Now Greek, now Gothic, was extolled as the only true and authentic style; each had its votaries among the dilettanti. Architectural design became an affair of fashions. An architect was expected to design, now in one style, now in another, and the bewildered artisan, robbed of all chance of expression, sank into the inarticulate drudge of to-day. Adam Bede seems to be the type of the last surviving exponent of tradition in architecture.

The best hope for the future lies in the quiet, resourceful determination of architects to see that what they have to say shall be expressed in a simple, straightforward, forcible way, easily understood and appreciated, and to go on repeating this until it has sunk deep into the minds of the executive workers. There need be no fear of monotony or dullness; the thoughts may vary, though the mode of expression remain the same, and there may be plenty of interest and novelty in a story told in simple words, without recourse to extravagant language or foreign quotations. One building thus produced may serve to leaven a whole district, and the local builders may be expected, little by little, and almost unconsciously, to assimilate its qualities. Happily the reign of the archaeologist is at an end; one rarely hears now the question, "What style do you call the building?" One is no longer expected to give chapter and verse for a moulding, and the use of the dentil, or dog's tooth, is no longer sufficient to stamp perfection upon the design. We are free, and if we will work with the courage and restrained individuality of the earlier men we may hope to re-establish a tradition that shall be honourable to ourselves and serviceable to those who follow.

H. I.

The New Front to Buckingham Palace.

AFTER a Press view at the Royal Commissions House on Tuesday afternoon last week, Sir Aston Webb's design for the new front to Buckingham Palace became public property, and the next morning reproductions of the perspective, more or less mutilated, appeared in most of the newspapers. On the Centre Plate in the present issue we are able to show the new elevation in conjunction with the existing front, which was erected from designs by Blore in 1837. These enable an exact comparison to be made between the old design and the new one.

We have always contended that Blore's work, though very dull, and in parts ugly, was not such iniquitous architecture as popularly described, and the elevation shows that, as a composition, it is at least not vulgar. We were under the impression that it was carried out in stucco in the customary manner. This, however, is not so. The front has no stucco on it, not even a skin; it is faced with Caen stone, which decayed so rapidly that a coat of paint had soon to be added as a preservative, and this painting process having been carried on in succeeding years, it was easy to make the mistake of supposing that the front was a painted stucco one.

Sir Aston Webb's task in designing a new front for the Palace was very circumscribed, for the reason that all the existing window and door openings had to be left untouched. The scheme of fenestration, therefore, was thus predetermined, and the architect had to make the best arrangement he could of it. Taking this into consideration, we think he has produced a very fair result, though we must confess that the string of Corinthian pilasters is commonplace.

Opinions on the new front have been freely expressed, and we notice that during the past week a number of questions in regard to it have been addressed in the House to the First Commissioner of Works. Some of these seem to be based on a misconception, as will be seen from the report of our Press Gallery representative, published elsewhere in this issue. It is ridiculous to suppose that a design for the new Palace carried out, like the rest of the scheme, under the direction of the Memorial Committee, should be submitted for approval to the president of the Royal Academy or the president of the Royal Institute. This is essentially a case where the only outside authority would be the First Commissioner of Works, and though we have not any great confidence in the artistic acumen of the Government architectural office, we do not see that in connection with the new front to Buckingham Palace there could have been any such departure as that suggested.

The adverse criticism of the design so far expressed has been purely destructive. It is refreshing, therefore, to see a little constructive criticism. Mr. H. H. Statham furnishes this by pointing out that the placing of the main mass in the centre is likely to make an unsatisfactory background to the Memorial, which comes directly in front of it. Klenze's "Ruhmes-Halle," near Munich, is cited as a better model to follow, for there the wings are emphasised and the central mass is kept subordinate, and this does not quarrel with the colossal statue of Bavaria in front of it. We think this is a good point. Another criticism which we would ourselves make is that the present design of the wings, embracing two columns and two pilasters under the pediment, has the effect of crushing the doorway below, and, in our opinion, it would be better to adopt a treatment which dispensed with the two middle columns.

Portland stone has been selected for the front, we presume, by reason of its excellent weathering qualities in the London atmosphere. It is, indeed, fortunate for London, so fouled with smoke, that Portland stone takes on such a beautiful white mantle. In positions, however, where it is not beaten by wind and washed by rain the surface becomes sooty. The west is the rainy quarter, and as the new front of Buckingham

Palace faces east it is not likely that it will preserve its first light appearance, though, of course, it will never have the dirty effect of the present painted front.

The new work, it may be added, is to be commenced at the beginning of August next and completed in three months, which short time for the execution of the work is explained by the fact that everything will be got ready beforehand. It should further be noted that only the outer stone skin of the existing front is to be removed and the Portland stone put in place of it, the remainder of the walling remaining untouched.

The L.G.B. and Reinforced Concrete.

WE heartily support Mr. Serrailier in his protest against the dog-in-the-manger policy of the Local Government Board in regard to reinforced concrete. This form of construction has long since established its position in France and America, and continues to be increasingly adopted for structures in this country. It is no longer in an experimental stage, but is acknowledged to be a form of construction just as stable as brick, stone, timber, or steel. Where is the justice, then, of the Local Government Board refusing to allow more than ten to fifteen years for the repayment of loans on reinforced concrete schemes, as compared with the thirty years granted for other forms of construction? Such treatment is, of course, quite unjust, and the more indefensible when it is remembered that the Admiralty, War Office, Office of Works and other Government departments have all adopted this form of construction. The London County Council had, inevitably, to alter its Building Act to meet the newer conditions created by the advent of reinforced concrete, and the Local Government Board will have, sooner or later, to similarly change its attitude. Official regulations are already pigeon-holed in its department, and the insistent pressure of outside opinion must draw out those regulations, and thereby secure fair treatment for reinforced concrete.

One point which Mr. Serrailier very rightly emphasises is that a great fuss is made of any failure of a reinforced concrete building, while failures of other forms of construction pass uncriticised. Nor is there any ground for assuming that reinforced concrete buildings will not last: on the contrary, their strength increases with age, and if a collapse is to take place it will certainly occur within two years—most probably immediately, if due to bad construction or to premature removal of the timber supports. So that the more the matter is examined the less logical is the Local Government Board's position.

The Public Critic of Architecture.

THE stupid sort of criticism of modern buildings which is usually made by speakers at public meetings was illustrated once again last week, when Sir Arundel Arundel thus expressed his opinion of the Wesleyan Hall: "To my untutored mind it is one of the ugliest buildings I have ever seen. Looked at from a distance, it seems to me like a reverberating furnace, with a kind of busby on the dome which might be the exit to the flames from the cupola. Looked at from below there seem to be ten shields, which look as if they are intended for coats of arms, and four which look like escutcheons, the use for which I cannot see. There are one or two extraordinary windows of the nature of segments of circles. Up above on the dome there are certain small openings, which look very much like those places where you look in and see molten metal boiling and bubbling within." This is such banality that we wonder how a "distinguished Indian Civil servant" could have had the effrontery to stand up on a public platform and utter it. We fear, however, that Sir Arundel Arundel has a following among public talkers, who, though possessing the merest smatterings of architectural knowledge, do not hesitate to express their views.

NASH'S HIGHGATE ARCHWAY.

At the beginning of the last century the increasing volume of coach traffic demanded improvement in the surface and gradient of the main roads leading from the metropolis to the provinces. Apart from the question of surface, with the exception of the great North Road over Highgate Hill, the other arteries presented but few obstacles in the way of difficult gradients. But the heavy incline from the City through Islington to Highgate, ending in the mountainous slope of the Hill, proved a great strain for horses on the first stage out of town.

In 1811 a tunnel 24 ft. wide was commenced through the London clay, from the junction of Holloway Road with the road from St. Pancras, leading to the village of Finchley. This engineering undertaking, however,

abnormally the central arch. He would not have had the audacity to adopt the principle of aqueduct construction, and the present steel structure now spanning the roadway in one stride shows how strictly utilitarian modern engineers have become.

From the top of one of the crack coaches of the Regency, says the "Manchester Telegraph," at seven o'clock on an autumn morning, the spectacle looking back towards London, spread in the valley below, invariably evoked artistic inclinations in the breast of the passengers. "By George, sir, I must return at the first opportunity and paint that view, sir—equal to anything achieved by Turner or Constable, sir. Why, even Rome can show nothing to equal this!" Alas, that day has passed; Highgate is no longer the outer-



NASH'S HIGHGATE ARCHWAY.

proved fruitless. The roof fell in, and a cutting was decided upon as the only alternative. The ubiquitous John Nash, then engaged in ambitious town-planning schemes, came to the rescue, and designed a structure in the model of a Roman aqueduct to bridge the cutting and continue the ancient way from Hornsey to Highgate. This scheme was finished in 1812, and for many years it was regarded as one of the sights of London. By travellers it was viewed, according to the direction pursued, as being either the "gateway to the north" or the modern entrance to the metropolis. In fact, many a countryman journeying up from the provinces for the first time, usually remarked, "Is that Highgate?" As an architectural composition the structure afforded an ingenious solution to a difficult problem. A modern engineer, lacking the æsthetic eye of John Nash, would have been content to stilt

most suburb of London; the flying machines of the Regency have vanished; their place is usurped by lumbering cars and motor juggernauts rattling along roads once sacred to Jehu's myrmidons.

Thirty years ago the dwarf balustrade which surmounted the upper series of arches was removed, its place being taken by a cage-like screen, erected to prevent feats of high diving. This in turn lasted for twenty years more, and finally the demolition of the whole structure was decided upon.

One cannot rhapsodise over the modern steel web; it conveys no hint of the open country beyond, no memory of joyous sketching expeditions, by road, to Stamford or Peterborough, the churches of the Fens, or the fane at Ely. The artist, depressed by the hard tendencies of the present hustling age, seeks refuge and inspirations in memories of the past.

THE INTERIOR OF LANSDOWNE HOUSE.

LANSDOWNE HOUSE, which stands rather gloomily in a little oasis beside Berkeley Square, is a typical example of its period—the last quarter of the eighteenth century. We are accustomed to regard the phase of English Palladianism which was then dominant as rather frigid, as compared with the warmth of earlier work, and while this estimate is undeniably true in substance, there are qualities in the buildings of the period which merit more recognition than is usually accorded to them. In particular, they exhibit a studied proportion, which results in elegant if not in deeply inspired effects, and the interior enrichment of the houses—more especially those by the Brothers Adam—is frequently of a very attractive character. This is well illustrated in the case of Lansdowne House, two interior views of which are here reproduced.

The building, then designated Shelburne House, is included in the second of the elaborate volumes which Robert and James Adam published in 1779. In that volume, in connection with the ground plan, it is stated: "The scite of this house being more ample than usual in London, it has admitted of a noble suite of Apartments on this floor and on the above. The Eating-room, in particular, is of great dimensions, and the Gallery is magnificent."

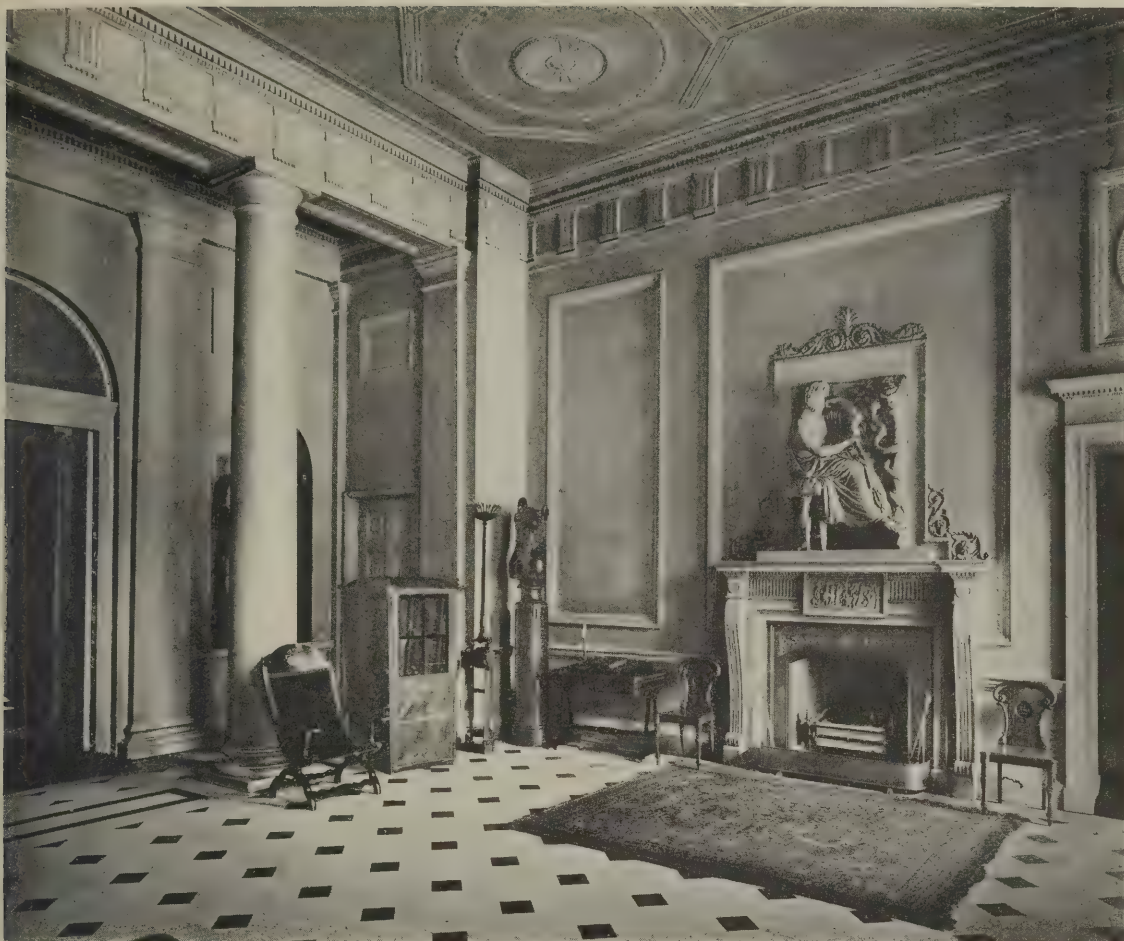
The arrangement of the plan may be briefly described as follows: Centrally placed on the main front was a porter's hall (illustrated on the opposite page), measuring 27 ft. by 28 ft., to the left of which were a large ante-room and the "Eating-room," 47 ft. by 27 ft. To the right of the hall were an ante-room and a bedroom on the front. The hall led to the grand staircase, centrally placed, with the first, second, and third drawing-rooms grouped around it, while to the right, and extending to the rear, was a large oblong gallery having a circular gallery leading out of it at either end.

In spite, however, of the fine symmetrical arrangement of the plan, nowhere does one find the generous vistas one would expect, the communication doors being too confined. Still, it must be conceded that the gallery called "magnificent" really deserves the adjective. An illustration of it is given on this page. It has been altered in execution and opened out into a room more than 100 ft. long. A noble roof spans the gallery; a great vault ornamented with coffers covers the central portion, and half-domes crown the circled ends.

With the exception of the first drawing-room, all the rooms are finished in plaster, and tinted in soft colours, abundant relief being afforded by niches, pillars, pilasters, and all the delicate ornaments employed by the Brothers Adam.



LANSDOWNE HOUSE, BERKELEY SQUARE, LONDON: THE GALLERY.



LANSDOWNE HOUSE, BERKELEY SQUARE, LONDON: THE ENTRANCE HALL.

THE COMMITTEE ON ANCIENT MONUMENTS.

AT last week's sitting of the Joint Committee of the two Houses of Parliament appointed to consider and report on the three Bills which have been introduced into the Lords dealing with the question of the preservation of ancient and historical buildings the Duke of Rutland and Mr. Thackeray Turner were the principal witnesses.

Examined by the Chairman, Lord Plymouth, the Duke criticised more particularly the Government's Bill, according to which the Board of Control is to be set up by the Commissioner of Works, with power to issue a preservation order with respect to any ancient monument of national interest in private possession. Haddon Hall, he said, was no doubt such a monument. It was true the order only appeared to mean that the owner must refrain from alterations, or additions, or removal, but then the owner might have to wait long before he got permission to carry out even urgent repairs. He called attention to Clause 7, which proposed to enact that where an order was in force the owner could not sell unless the Commissioner of Works refused to buy at a price fixed by the Board of Inland Revenue as that which it would fetch in the open market. That was a dangerous and most arbitrary power. Considering the weight of the succession duties and other burdens, he contended that property owners ought not to be subjected in addition to the possible incalculable hardship which might be inflicted by this clause.

In his opinion it was impossible for the Board of Inland Revenue or any other body to say what an ancient monument was. It was entirely a matter of

fancy; at one time a very high price might be obtained, and at another nothing at all.

In answer to questions by members of the Committee, his Grace said his objections to the preservation order would not be met even if the historical building were free from death duties. He would prefer that Haddon Hall should not be scheduled, though of course it would be a great relief if the place were not subject to death duties.

Asked by Lord Sheffield whether local authorities might not be entrusted with the care of the large number of old manor houses, tithe barns, and portions of abbeys now used as farm buildings, the Duke said he was suspicious of local experts. The meddling fever was extending all over the country and causing much strained feeling. Within the last ten days an archaeological body had arrogated to itself the right to interfere with property of his.

The Chairman asked the witness whether he would forbid the removal of such things as old panellings from historical buildings, and in reply he said he thought this would give rise to difficulty. His own drawing-room was adorned with some ancient panelling, which had been transferred from a Leicestershire farmhouse owned by himself. This he might have been prevented from doing if such a prohibition had been in existence.

Mr. Thackeray Turner, chairman of the Society for the Protection of Ancient Monuments and for many years its secretary, stated, by way of contradiction of certain evidence given earlier in the inquiry, that in several cases damage had been done in recent years to ancient work in churches in this country by so-called restorations. The authorities of the Church, in his view, did not make sufficient use of their powers to prevent such damage.

HERE AND THERE.

I HAVE just come across a sentence in the leading American architectural paper—the "Architectural Review" of Boston—which makes one tingle with elation. For here we find—passing strange—something being said in praise of our own work. We have long since become accustomed to hear how much better they do these things in France, and to learn, within recent years, how poor our own architectural efforts are in comparison with what is being done in the States. It is nothing less than a shock, then, to read the following in a review of current architectural periodicals: "No one can follow the English magazines month after month without being impressed by the great variety of the work done in that country, and also by the frequent recurrence of designs of a more original and virile type than seems to be produced in American offices." Is this merely another instance of the prophet not being without honour save in his own country, or are we really doing better work than we are accustomed to believe? Have American architects had a surfeit of Letarouilly, and are they satiated with the baths of the Romans?—so that our own buildings, based on no such grand models, have a more "original" and "virile" appearance. There may be a germ of truth in that suggestion, but the whole truth lies, I fear, in less happy relation to ourselves. Except in domestic work, we are a long way below the American achievement, and the writer referred to would find it as difficult to substantiate his opinion by any large selection of contemporary civic work in this country as he would find it difficult to get American colleagues to confirm his own views on the subject.

* * * *

In the discussion over the style to be adopted for the new Delhi I notice one phrase which is worth abstracting for separate consideration. It is "catholicity of taste." We are urged to look at things in a broad way, to see the worth of all styles, rather than to clamour for one particular type which happens to interest us. The phrase is high-sounding, and we are apt to be led away by it. So that a word in time may not be amiss. I would say then that "catholicity of taste" is the very thing we do not need to foster, for the simple reason that we already have a superabundance of it. "Catholicity of taste" leads us into a maze of interests, and is largely responsible for the nondescript buildings which line our thoroughfares. We want, rather, an insularity of interest, a purity of taste, a concentration on one style—be it Gothic, Classic, Byzantine, or Hindu: for by that method only are we likely to achieve anything great. In this, as in the basis put forward for a resolute School of Architecture, the thing most necessary is faith—clear, strong, even dogmatic faith—in some guiding principle of design: a sound belief that one method of expression is right, that all the rest are pernicious heresies—to be understood, no doubt, but not practised. With a mind under control, this method will not produce an architect of narrow vision, but one of concentrated vision—a man who is able to see things in one way, to do them thoroughly, and to defend them against all miscellaneous assaults. The maxim which urges us to see good in everything has an excellent moral ring about it, but in architecture we suffer from a glut of that feeling; we see so much good around us, we have such "catholicity of taste" that comparative criticism is moribund, and the faculty of working uniformly in one vein is non-existent. Let us have Neo-Grecs, English Renaissancists, Gothicists, or Art-Nouveausts hot and strong, rather than Neo-Grec-Gothic-Renaissancists: it may be a choice of evils, but the latter is far the worse. The existing

chaos recalls to mind the late Mr. Labouchere's description of Pope's Villa at Twickenham—a building designed in the Gothic style by a Chinaman who took in Switzerland on his way to England.

* * * *

It is an oversight that multitudes must have observed, how seldom provision is made for trapping about a building which may have a disastrous effect when placed haphazard. Perhaps nothing is more noticeable in this respect than the general absence of space for noticeboards or name-plates. Thus it happens that no sooner has the architect finished his work, and the building been handed over, than a process of disfigurement commences. The Wesleyan Hall offers a good illustration. It was not to be anticipated, perhaps, that the bank who occupy one corner would bespatter their title about the façade in the manner already criticised in these columns, but it must have been evident from the start that the Wesleyan authorities would want to placard the building with their announcements of meetings. And as from experience we know that architecture stands a small chance against advertisement, the evil might have been kept within decent bounds if panels had been included in the design for the reception of the ubiquitous bill. As things are, the entrance front has one or two good-sized boards fixed in unfortunate positions on the main façade, while other notices sufficiently large to be disfigurements are propped about the entrances. This is one instance out of many that could be given.

The brass name-plate can also be no little blemish on a building when left to the stereotyped producers of such things, for if there is one detail of modern work which is generally devoid of taste it is lettering. The idea would seem to be general that unless some gaunt, ugly block type is adopted, the lettering will not be sufficiently legible, whereas the fact is that a dozen excellent models are ready to hand which are equally as readable as bald engineering lettering, while being delightful to the eye. It is time, therefore, that the architect took account of this matter.

Another feature which is commonly neglected in the architectural scheme is the awning. This more particularly refers to hotels or places of entertainment abutting on the pavement. In wet weather or for special occasions—and these may be numerous—an awning becomes a necessity. It is not an unnoticeable trifle; on the contrary, it may be a distinct blemish. Hence, one is not going too far to claim that provision for the fitting-up of an awning should form part of the doorway scheme, and in the case of a building of special importance it is not too much to ask that the architect should have a word to say as to the design of the awning itself.

Provision for the reception of the title of a building, or of the firm who intend to occupy it, also needs to be made, else the architect's façade, however carefully designed otherwise, will of a certainty be marred.

While the by-laws permit it, of course, nothing can be done beforehand to prevent the disfigurement produced by huge advertising letters; but a certain amount of forestalling is within the power of the architect, and he should take advantage of it.

* * * *

The Renaissance has had a variety of adjectives showered upon it, from the most ecstatic down to Ruskin's "foul torrent." But the opinion of the Chicago visitor to an Italian palace has yet to be recorded. "This room," said the Count, "is a very good specimen of Renaissance," to which the visitor replied: "I don't know what renny-saunse means, but this room is the style I like. It's bully."

UBIQUE.

CORRESPONDENCE.

*The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents.
Correspondents are asked to be brief and to write on one side only of the paper.*

"A Defence of Official Architecture."

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Criticisms of the article under the above title persistently imply that the profession consists of private practitioners. The interests of the profession are those of the student, the pupil, the principal, and the assistant. Any adjustment of these component interests to each other would result in some of the present starving mouths being filled and the bread and butter extracted from others, who, discontented now, would then exchange a moderate pittance for worse or none at all.

The profession secures a distinct advantage by the continuous employment of a large number of assistants that would be lacking if an equivalent amount of business were placed in the hands of a few private practitioners; the personal interests involved being more numerous and extensive in the former case than in the latter. The contention that taste in official architecture has attained an equally important level to that of private practice has not been opposed.

These two unassailed positions point to the inference that official architecture, in spite of its many imperfections, is, at least, on terms of professional equality with the results of private practice. That much official work is monotonous and useless is conceded. Many grievances continue and much is wasted. Reformation, however, does not depend upon the implied and revolutionary proposals of opponents, but upon public criticism and management.

Ratepayers should not only desire the best work, but the best conditions for those who produce it, and the greatest amount of direct control to ensure the proper fulfilment of their wishes. To reduce everything to a question of so many shillings and pence in the pound is to lay the foundation of iniquitous dealing, and what is currently, but ironically, termed the best and the most economical.

The special cases instanced by Mr. K. Gammell only show that municipalisation, without effective critical surveillance by an interested electorate, is sometimes inferior to "farming out" responsibilities.

A partial judgment would find the citation of a few deplorable instances more than sufficient to condemn private practice.

The premises of the proposition to which a reply is requested are very debatable, and highly diluted with terms and qualifications which rob the question of the pertinency Mr. K. Gammell ascribes to it, and renders any conclusions futile. Shorn of its "trimmings," however, the response is decidedly affirmative.

ERNEST J. DIXON, A.R.I.B.A.

London, W., October 23rd, 1912.

Society of Architects' Examination.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Professor Adams is, I think, a little too hard on one particular on the disappointed candidate "W. Dublin" in your current issue. Most candidates would see that the term "foot-candle power" was intended to mean ordinary candle-power, with the word "foot" added to give the candidate's memory a friendly jog. But unfortunately the addition can be rather confusing.

One "candle-power" is the unit of measurement of light source, irrespective of the degree of illumination it produces, and representing a standard candle as seen at a distance of one foot, whereas a "foot-candle" is the unit of measurement of illumination, irrespective of the light source, and represents the degree of

illumination thrown upon a surface by a source of one candle-power at a distance of one foot.

One is the measurement of cause, the other is the measurement of effect. The candidate might possibly take "foot-candle-power" to mean "candle-power-per-foot-super," or intrinsic brilliancy, which is the candle-power of a surface of known area, and he would be met with the difficulty that intrinsic brilliancy is almost invariably measured in candle-power per square inch. For instance, in specifying lighting one might stipulate that the intrinsic brilliancy of the shades must not exceed, say, $2\frac{1}{2}$ candle-power per square inch rather than 360 candle-power per square foot.

PERCY J. WALDRAM.

London, W.C.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In Mr. Adams's reply to my letter on the above subject, one or two points are, I think, open to controversy.

With regard to the paper on Quantities, I am aware that it is not the practice of quantity surveyors to use any formula for arriving at the areas or circumferences of circles; they can be found in tables in many handbooks, but I am at a loss to know how some of the questions set in this examination are to be solved without memorising the said formulæ. The only alternative, it appears, would be for students to use the given tables at the examination, or memorise the whole of the tables. The former is, I believe, not allowed, and the latter is not practicable. The fact remains that in four questions out of five it was necessary to find the areas or circumferences of circles or semi-circles in order to answer them correctly.

The questions on foot-candle-power and carbon and metallic filaments I submitted to a few qualified and experienced architects, who frankly admitted that they would be "stumped" by such questions. I imagine there must be a vast army of qualified men who, therefore, are "not in a position to advise a client as to lighting a factory." As to the question in building construction, I have been unable to obtain a satisfactory explanation of it from any of my qualified friends.

I regret that Mr. Adams has failed (as it appears he has) to discover either skill or experience; but I do not think it is surprising, when one considers the questions set.

W.

Dublin.

"Craftsmanship and Commercialism."

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I have just noticed that in your issue of August 10th, under the title of "Craftsmanship and Commercialism," there is an editorial deploring the decadence of craftsmanship and attempting to discover the cause.

If it is not too late to re-open this subject I should like to suggest that the cause may be found in the slenderness of demand for the services of able craftsmen in almost every craft, and the difficulty such craftsmen experience in getting into touch with the few who do need them, and as a natural consequence the discouragement of capable craftspeople where they exist.

It seems to me that your informant was quite correct, and stated an undeniable fact when he assured you that there are modern craftsmen capable of doing work equal to any which has ever been done, but such have little hope of reaching people who would be glad to employ them—if they knew of them—under present conditions. Instead of employing themselves with work they can do surpassingly well, modern craftsmen are compelled to employ a large proportion of their existence in seeking work at the offices of architects, where it generally happens that men they can see

readily have not a practice of that nature which calls for the employment of talent above the average, while the men who could find them work demanding craftsmanship of the highest order never see callers, and are indeed so inaccessible that examples of work left for inspection are rarely opened or looked at.

There is the alternative of newspaper advertisement, of course, to enable the craftsman to get into touch, but unless this is pursued in a systematic, wholesale, and permanent manner, it is not successful, and no craftsman working singly can afford such an extensive drain on his resources. Well-financed firms, able to advertise ceaselessly, secure all the cream of the work in every craft.

To your instance of a metal-worker I should like to add another. I happen to be acquainted with two smiths who are capable of doing forged work of the most astonishing merit. Nowhere on the Continent or in museums could one see better craftsmanship than these two could offer to any who employed them. These two excellent craftsmen are at the present time brazing casement joints for a livelihood! And the really ironical part of the matter is that often firms with big reputations have sought their aid to do work which none of their own men were capable of touching. This would not matter if the craftsman who did the work got the credit and the responsibility for it, and a fair proportion of the money earned, but such is not the case, except with one or two liberal-minded institutions of the kind.

The schools of art are indirect competitors with craftsmen, in the sense that young art-students, or rather budding craftsmen, constantly dispose of work to the institutions mentioned for trifling sums—work of the highest merit sometimes, which has taken months of strenuous labour under the superintendence of capable masters. These students are supported from home; it is all profit and pocket-money to them; but if the student intends to follow his particular craft for a living, it seems apparent that he is thus destroying his own market.

We have a Royal Academy of Arts—"Fine" Arts. It seems to me that there is every need for a Royal Academy of Arts and Crafts, with yearly exhibitions in London. A sum of money ought to be set aside by Government to purchase works from these exhibitions, works which should go to form a Central National Gallery of Applied Modern Art, from which, again, exhibits should be sent, at the expense of the nation, to the great international exhibitions abroad, in order to bring recognition and work thence to our best craftsmen. To this National Gallery of Modern Craftwork anyone who wanted good work could go and choose for himself the craftsman he desired.

WALTER H. CAMM.

Smethwick, near Birmingham.

"Professor of Architecture in the University of London."
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I see that in THE ARCHITECTS' AND BUILDERS' JOURNAL you have incorrectly described me as Professor of Architecture in the University of London—a position which is held with much distinction by my friend Professor F. M. Simpson.

Will you kindly correct the mistake in the next issue and oblige?

BANISTER F. FLETCHER.

THE "DIP" IN PICCADILLY.

IN Piccadilly, between the Savile and the Junior Athenæum, there is a pronounced dip in the roadway. To get rid of it will be to rob clubmen of much of the interest of looking out of window, not because the dip is a picturesque variant on the eternal

monotony of straight and level streetway, but because it is rather prolific of adventure, as a dip is bound to be where the traffic is incessant. The clubmen are to lose these thrills, for the Westminster City Council have approved of a recommendation by their Improvements Committee to raise the level of this section of the roadway, and agreed to urge the London County Council to take this scheme into account in sanctioning the rebuilding of the Sutton Estate property, which ought not to be so constructed as to prejudice the proposed improvement.

THE PANAMA EXPOSITION.

AN exposition is to be held in San Francisco in 1915, in celebration of the piercing of the Isthmus of Panama and of the rebuilding of San Francisco. It is stated that the sum of £16,000,000 is to be spent on the exhibition, and £20,000,000 has been already voted by the San Francisco municipality for the reconstruction of the city, which is to include the erection of a new city hall, a "civic auditorium," an opera-house, a library, and a memorial tower 850 ft. high, to serve as a landmark for vessels making the Golden Gates. A new sea wall and great harbour works are already under construction, fine boulevards have been planned, and the whole city is to be made to harmonise with the exposition. For some months past a commission of eminent American architects has met in conference to design the buildings and co-ordinate ideas, "so that the architectural features shall be in harmony with one another, with the subject, and with the locality." That is the American way—or, rather, the Americans have a peculiar felicity in turning such co-operation to supreme advantage, as when they succeeded by this means, at St. Louis, in evolving their great school of architecture.

The designs of the fourteen principal exhibition buildings have been approved, and work upon these will begin within the next twelvemonth, contracts for the Palace of Machinery being already invited.

R.I.B.A. PROBLEMS IN DESIGN.

WE publish on pages 469 and 470 of this issue the design for a senate house by Mr. R. Duckett of Westminster, recently approved among those submitted for Subject IV. (a). Mr. Duckett, we understand, is not attached to any school of architecture, but is studying privately. The other approved designs for this subject are by Mr. H. A. Dod, of Birkdale; Mr. Ernest Gee, of Chester; Mr. Ernest Prestwich, of Leigh; Mr. E. F. Bothwell, of Forest Gate; Mr. A. D. Clare, of London; Mr. E. H. Gibson and Mr. K. Glover. Mr. Dod, Mr. Prestwich, and Mr. Gee, it may be noted, are all students at the Liverpool School of Architecture, and Mr. Dod and Mr. Prestwich, having had this their fourth design approved by the Board, have now completed the preliminary work for the Final Examination, and are the first to do so under the new regulations.

The requirements for Subject IV. were as follows:—

(a) A senate house, on an isolated site, for a modern university, to consist of a council chamber to seat sixty persons, with ante-room, waiting-room and cloak room, and two committee-rooms, each to seat twenty persons around a table. Plans, sections, and elevations to be to $\frac{1}{8}$ in. scale. Details, both external and internal, to $\frac{1}{2}$ in. scale and shaded.

(b) A bridge carrying a road 25 ft. wide between parapets over a canal 40 ft. wide. The bridge to be of brick, stone, or reinforced concrete. Drawings to be $\frac{1}{2}$ in. scale and to show complete construction. Important details to 1 in. scale. Calculations to be given.

We understand that no design for (b) was approved.

THE VENTILATION OF THE HOUSE OF COMMONS.

DR. LEONARD HILL, whose important researches into the physical and hygienic phenomena of ventilation have been frequently referred to in this Journal, has addressed the following communication to "The Times":—

According to the Parliamentary Reports of October 10th, in answer to a question by Sir J. D. Rees, Mr. Wedgwood Benn stated that £5,000 had been spent in carrying out the recommendations of committees and the reports of Dr. Mervyn Gordon; that the air in the chamber was constantly in movement, and was changed about six times an hour; that a uniform temperature was maintained; and the First Commissioner of Works was not of opinion that any alteration in the ventilation system would be desirable.

And yet there are constant complaints, and members believe they suffer both in comfort and in health. I fancy the ventilating engineer of the House secures a quiet life by exchanging the letters of complaint—those written by men used to life in tropical climes with those written by members who love open air. Some 10,000 cubic feet of air per minute are drawn in from the Thames side by means of a fan, screened through copper gauze, which is sprayed with water, and driven up a white-tiled tunnel to the air chamber beneath the House. The fresh cool air in this tunnel blows in a steady bracing wind, and the tired Minister may find refreshment here equal to a blow on Brighton Pier. If sea water were used in the spray the legislator could have a good sea blow whenever he liked, and particularly on close days, when a stroll on the terrace is of little value. I suggest that a walking-hall be made wind swept with sea salt in the air, a diverticulum from the main ventilating tunnel. When the air reaches the chamber beneath the House it passes over steam-heated coils and then into a mixing chamber, whence it is delivered at a uniform temperature of 63 deg. F. through the gauze mat screened floor of the House. Passing upward through the equalised resistance in every part of the floor, the air ascends in a steady stream and without perceptible draught, and leaves the Chamber by the roof. Under the front benches on either side are placed small trap-doors, through which the solicitous engineer can send a fuller current to such members of the Ministry or Opposition leaders who desire it. Thus to Mr. John Burns an ampler stream of air may ascend than to the Chancellor of the Exchequer, an example of the care which is taken by the officials over those who have to endure long hours of confinement on the front benches. When the division bell rings the air current is switched over to the division lobbies, and back again to the House when the division is over. Thus the same uniformity persists throughout the whole sitting. All the rest of the House of Commons seems to be heated to the same uniform windless state. It is in this uniformity that the fatigue and loss of buoyancy of spirit lies. The chemical purity of the air is, of course, excellent, and has nothing to do with the dissatisfaction of the members. After dining we like to withdraw to another room, and welcome a cooler air and different quality of conditions—moisture, radiant heat, etc., which we find in the drawing or billiard room. In the House there is not only the dull uniformity of air, but of speech.

I would venture to suggest that the uniformity of air might be broken. Variations might be very cautiously tried and extended if found pleasant and helpful. When the division bell rings the members might troop into lobbies heated to a less degree—these ought to be slightly cooler—for the members will warm themselves by movement. While they are in the lobbies the Chamber might be washed out for a minute with a

full stream of fresh cool air, and then the steady current at 63 deg. F. be re-established. Prolonged uniformity of temperature is wholly unnatural; by the absence of those cutaneous excitations which result from the changing play of wind, sun, and cloud, the nervous system is depressed. Moreover, the warm uniform atmosphere enables the legislator to sit motionless; he does not use his muscles to warm himself. This leads to the stagnation of the blood in his dependent parts, for muscular movement and change of posture returns the venous blood to the heart, and is as important as the heart itself in securing an efficient circulation. The lack of movement also means less oxygen breathed, less food metabolized, less blood circulated per minute, everything to bring the body into a less vigorous condition of health. The weekend in the country and open-air exercise, then, can counteract these ill-effects, but the comfort and good spirits of the members might, I believe, be improved by varying the ventilation. I do not propose that the members should be chilled or submitted to draughts—they will stand neither—but that the temperature should be frequently varied within reasonable bounds—say 55 deg.-65 deg. F.

LONDON'S THREE NEW BRIDGES.

THE three new bridges to be erected over the Thames in London are Southwark, Lambeth, and St. Paul's.

Rebuilding of Southwark Bridge.

At last week's meeting of the Bridge House Estates Committee of the Corporation tenders for the work of reconstructing Southwark Bridge and altering the gradients were opened and considered. Ultimately the tender of Sir William Arrol and Co., Ltd., was accepted. The amount of the tender was not communicated to the Press. The Comptroller was directed to draw up the necessary agreements, and the work will be begun as soon as possible. The accepted tender provides for the demolition of the existing bridge and the building of a new structure on the present site as provided by the Act passed by agreement between the City Corporation and the London County Council. The gradients of the new bridge will be "eased," and while the work of rebuilding is proceeding a temporary bridge will be constructed. Until Southwark Bridge is rebuilt the carrying out of the scheme for the new St. Paul's Bridge cannot be entered upon. The City is, in the meantime, buying the necessary property to make a good approach to the St. Paul's Bridge.

Rebuilding of Lambeth Bridge.

At last week's meeting of the London County Council the Improvements Committee proposed that application should be again made to Parliament next year for authority to reconstruct Lambeth Bridge as a steel arch bridge, of a width of 48 ft., at an estimated cost of £240,000. The scheme was rejected by the House of Commons last year, the arguments advanced against it being that the amenities of the Houses of Parliament would be affected, that the bridge would be too narrow, and that the gradients would be too steep. Mr. Briant moved that the Committee's recommendation be referred back for further consideration and report, and Mr. Frank Smith moved, as an addendum, that the Committee should be instructed to submit a scheme providing for a bridge not less than 60 ft. in width, and with gradients less steep. In the course of the discussion both Mr. A. T. Taylor and Viscount Midleton laid stress upon the need for reasonable economy, in view of the expenditure which was desirable in connection with the clearing of slum areas and in other directions. Mr. W. Whitaker Thompson asked that the scheme should be submitted to Parliament in order that it may have "a fair run" before a

Committee. The proposed action might, he thought, have been considered presumptuous, but for the fact that the Bill had been rejected by the House of Commons, after a very brief discussion, by a small majority. The amendment was defeated by 64 votes to 45. Mr. Gillett moved, as a further amendment, "That the recommendation be referred back to the Committee, with instructions to approach the City Corporation with a view to finding out whether they would agree to a grant being made by the Bridge House Estates Committee towards the construction of a more satisfactory bridge; and, if so, whether they would support any legal action that may be required to allow such a contribution to be made." This was also defeated, and the Committee's recommendation was approved.

The New St. Paul's Bridge.

To a representative of the "Morning Post" last week Mr. Mervyn Macartney, F.S.A., F.R.I.B.A., surveyor to the Dean and Chapter of St. Paul's, thus expressed himself in regard to the above: "This bridge is not needed at all, but the promoters have so obscured the proposals that it is really difficult to offer any criticism. The Bridge House Estates Committee have got a certain sum in hand, and they must spend it. Originally there was a ferry across the river near where London Bridge stands, and the owner of the ferry accumulated large sums of money and acquired lands which afterwards became very valuable. The income from these estates now amounts to something like £200,000 a year, out of which about £3,000 a year goes towards the upkeep of London Bridge. The difficulty is that the different interests are so mixed up that it is impossible to get exact information as to the estate and as to the way in which the money is allocated. The main provision, it is stated, is that this money must be expended within the boundaries of the City, and that is how it is that the proposal arises to construct the bridge at this particular spot. If the idea is to relieve the congested traffic of the existing bridges what is wanted is a carefully-thought-out plan. For instance, it would be much better to construct a bridge across by the Temple to take the tramways to Kingsway and to relieve Waterloo and Blackfriars. Of course, the difficulty is that such a bridge would be outside the City boundaries. It is doubtful whether there is any real obligation to expend this money in the City of London. They have expended money outside the City boundaries before now."

THE NEW DELHI.

It is announced that the Viceroy of India will make his State entry into Delhi on December 23rd, and from that date the city will assume its new position as the headquarters of the Government of India. At the last recorded meeting of the Supreme Legislative Council, the Viceroy (Lord Hardinge) said that among the several schemes that had been proposed for the laying out of the city there was one by an Indian, but no definite decision would be taken until the return of the experts in December. In the meantime estimates for irrigation, building, etc., were being very carefully prepared. He was glad to know, he said, that a considerable number of Indians as well as Europeans had entered for the open competition in designs for four different classes of bungalows. The question of competition for further buildings was still under consideration. As to the style of architecture to be adopted, nothing had so far been settled, but preparations were being actively pushed on, so that, as soon as the laying-out of the new city had been decided upon, building operations would proceed without delay.

Unabated vigour continues to animate discussion on the choice of architectural styles. At a largely attended meeting of the East India Association, held

at Caxton Hall, Westminster, last week, Sir Arundel T. Arundel presiding, Mr. E. B. Havell read a paper in which he advocated the adoption of an Indian style. He contended that India still had a strong living tradition of art and craft, only needing a new stimulus to revive its former vigour, and he held that it was the duty of the Government to use this great occasion to prove that declarations of sympathy were sincere. It was not only a question of art, but of right conduct and wise policy.

Sir George Birdwood said that he had the greatest confidence in the designs of the Government of India, proving worthy of the future Imperial capital of India. As to its architecture, Government had already done the right and proper thing in choosing as their architect one who commanded the suffrages of the whole profession in the United Kingdom, and he believed they had left the decision of the vexed question of styles absolutely in his discretion. In architecture the man was of more importance than the style, and he only hoped the Government were leaving the expenditure on architecture in the discretion of Mr. Lutyens. They must, he said, build a new Delhi for an eternal name—as Babylon and Nineveh, Thebes and Memphis, Athens and Rome were builded.

Sir Bradford Leslie, speaking as a civil engineer, said the first consideration should be to remove from the existing Delhi the reproach of being the most insanitary city in the Punjab. A weir should be built across the Jumna to the south of the city, and the malarious swamps drained into a lake surrounded by reclaimed land. A fine boulevard could be provided and the new capital built close to the new town instead of three miles away from it. He thought it would be a burning shame to impose upon the people of India what Mr. Havell had called big-wig Renaissance architecture.

WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS.

CONTINUING this series, we publish on pages 472 and 473 of the present issue a working drawing of an interesting example of modern domestic work, Conkwell Grange, Wiltshire, by Mr. E. Guy Dawber, F.R.I.B.A. This house is built on the slope of a hill about seven miles from Bath. The walls are in coursed rubble of stone taken from some old walls found on the estate. All dressings and ashlar work are executed in Bath "Ridge" stone from the quarries of the Corsham Quarry Company. The roof is covered with old stone slates, which were procured in the neighbourhood.

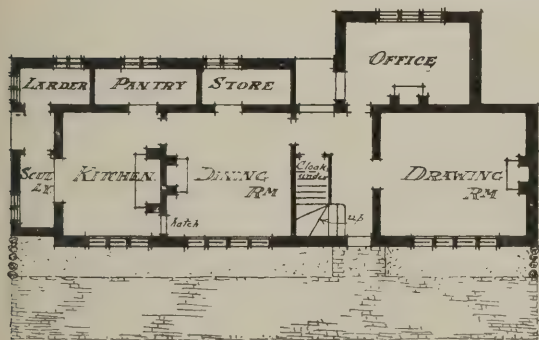
MODERN SMALL HOUSES.

DESPITE the numerous publications dealing with modern small houses which have been issued during the past few years, interest in the subject continues unabated. This, presumably, is by reason of the fact that the majority of architects are concerned with house building, and it is of practical value to see what is being done by capable members of the profession in different parts of the country. The Special Issue dealing with garden suburb houses which we published at the end of last year proved this to be the case, for the issue went out of print soon after it appeared. Bearing this in mind, we have decided to give every week for some time to come a good example of a modern small house, illustrated by photograph and plans. The series is commenced this week with a house at Denham, in Buckinghamshire, of which Mr. Francis Bacon, of 9, Bedford Row, W.C., is the architect.

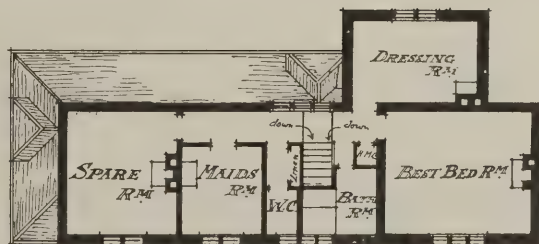


COTTAGE at

DENHAM, BUCKS



GROUND PLAN.

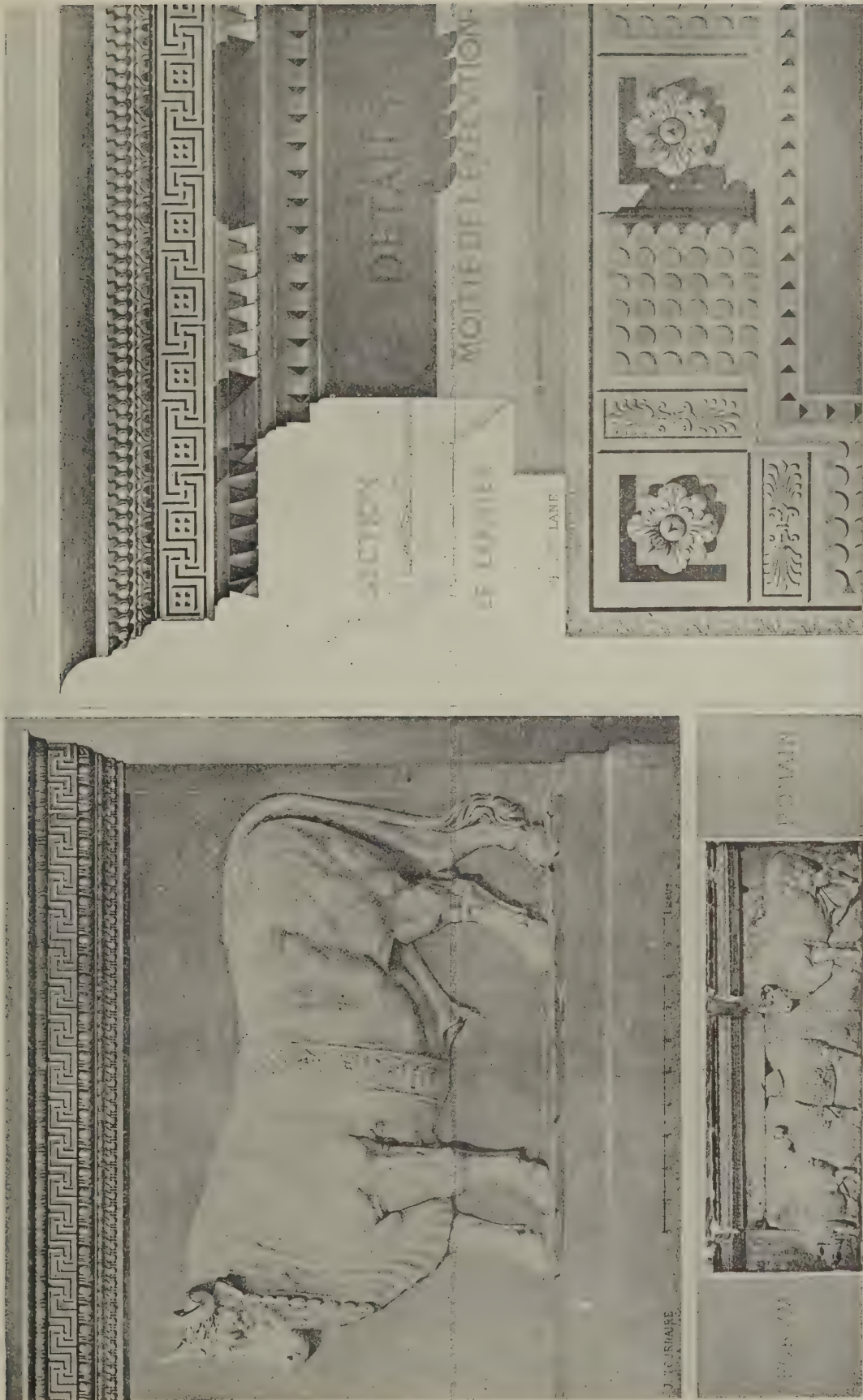


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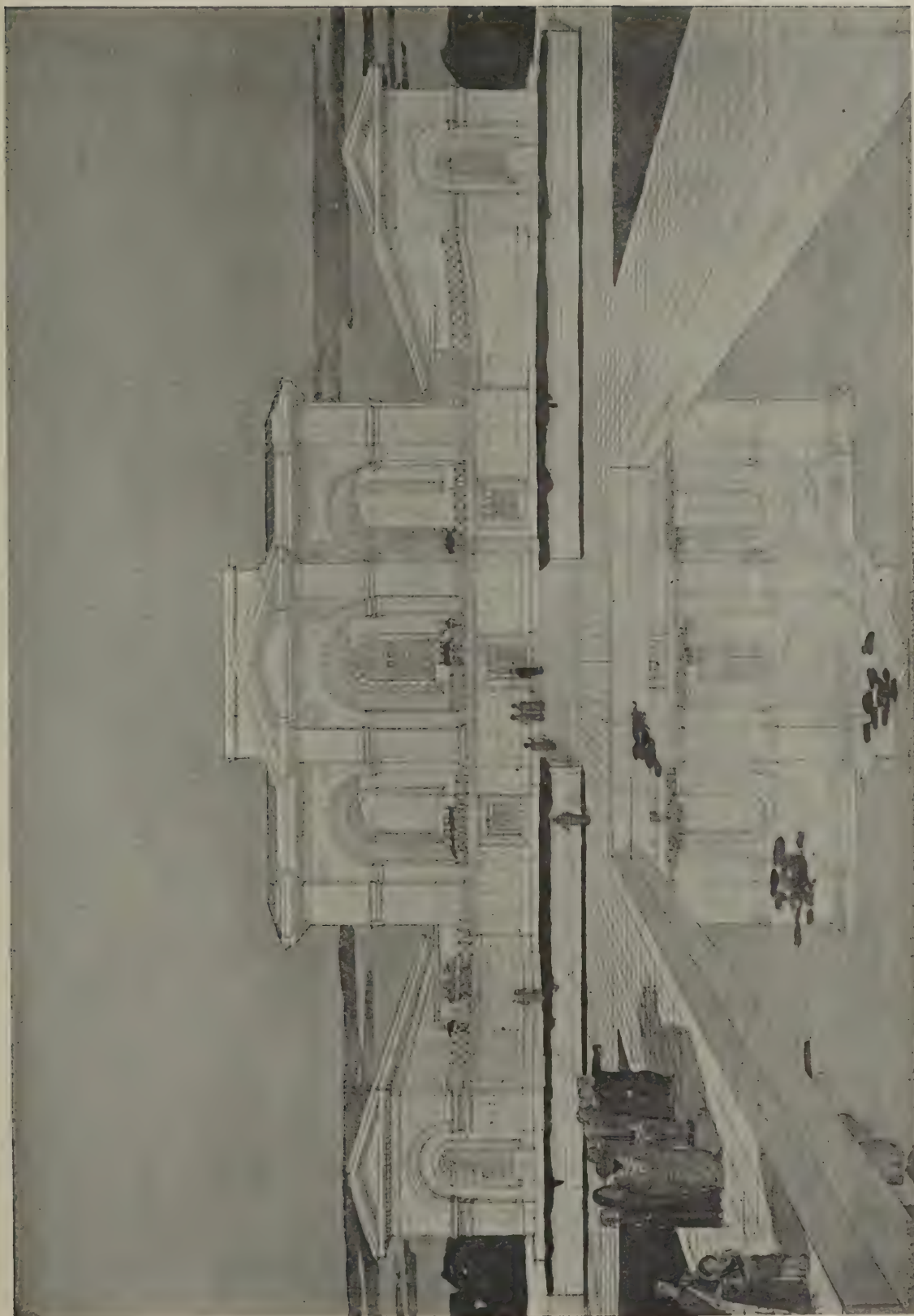
Francis Bacon, Archt.

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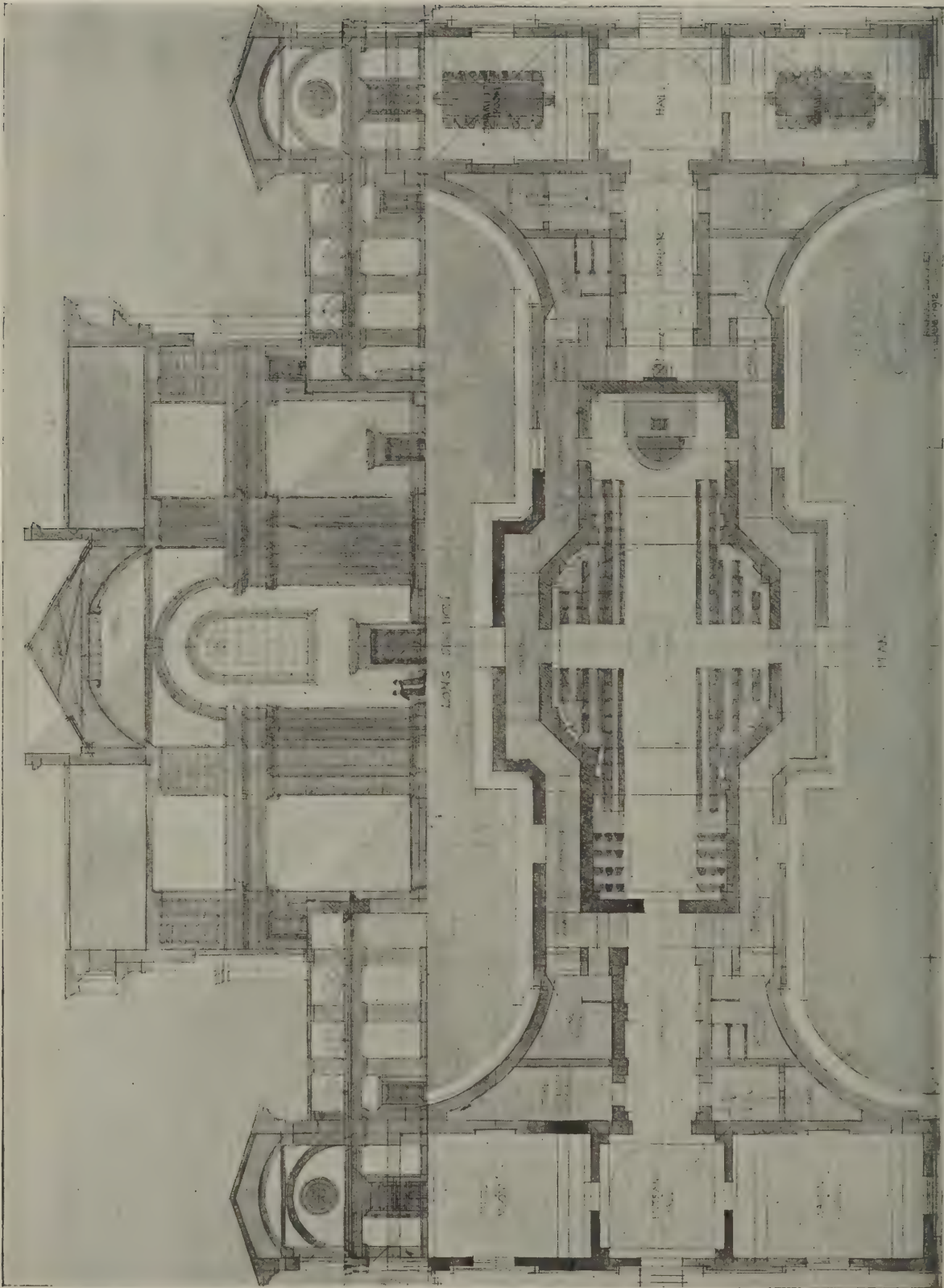


FRAGMENTS FROM THE ROMAN FORUM. RESTORATION BY MM. DEGLANE AND TOURNAIRE.

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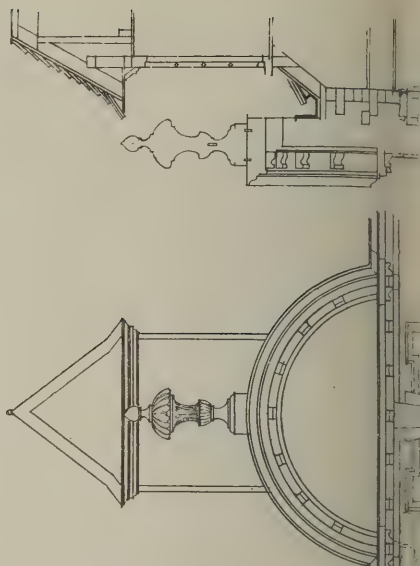
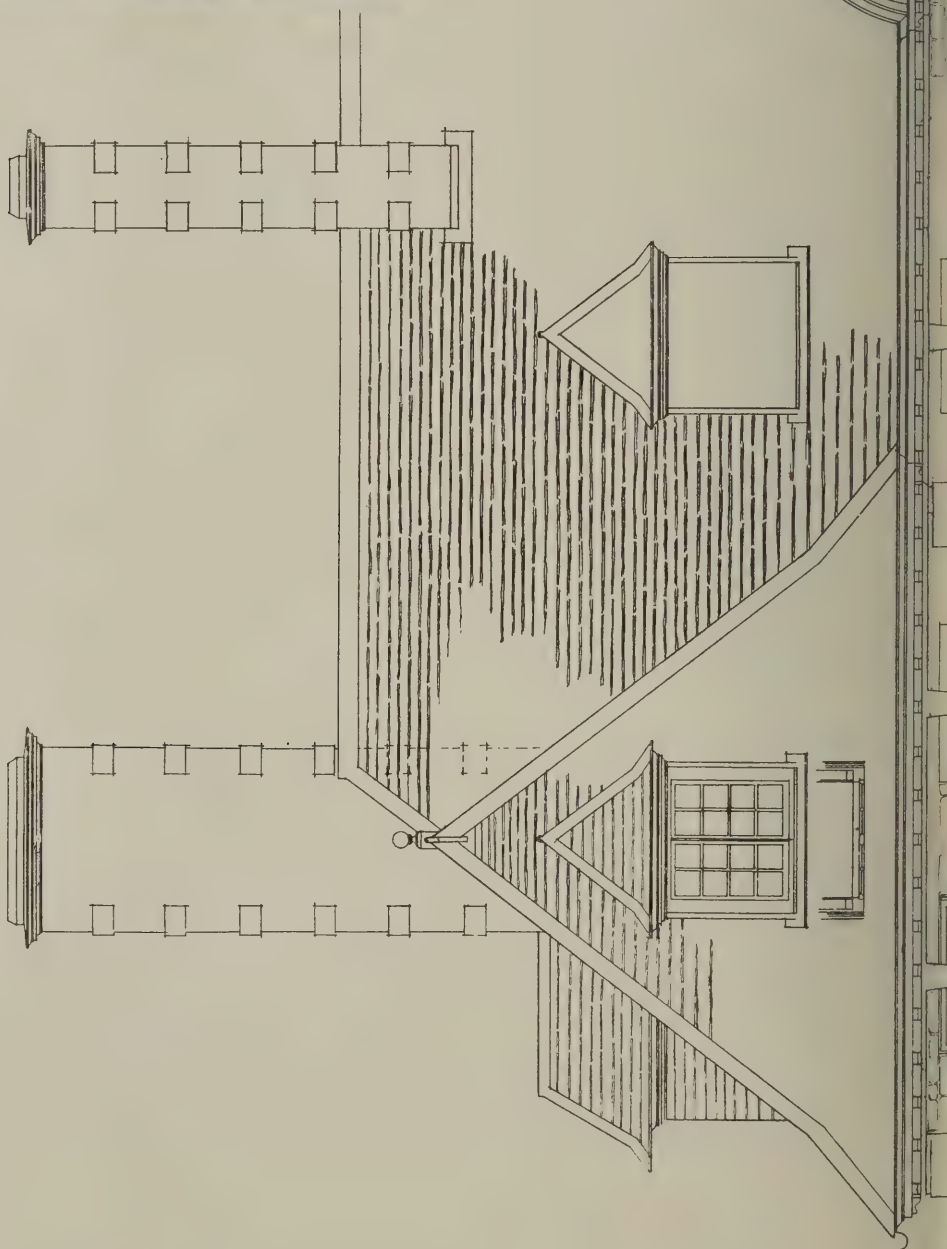
TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION : APPROVED DESIGN, SUBJECT IV. (a).—A SENATE HOUSE. BY R. DUCKETT.

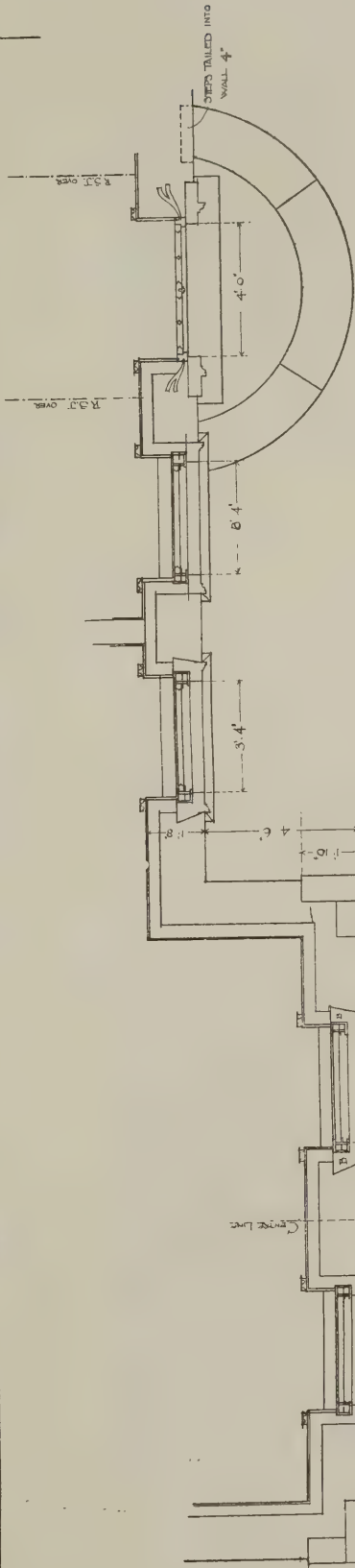
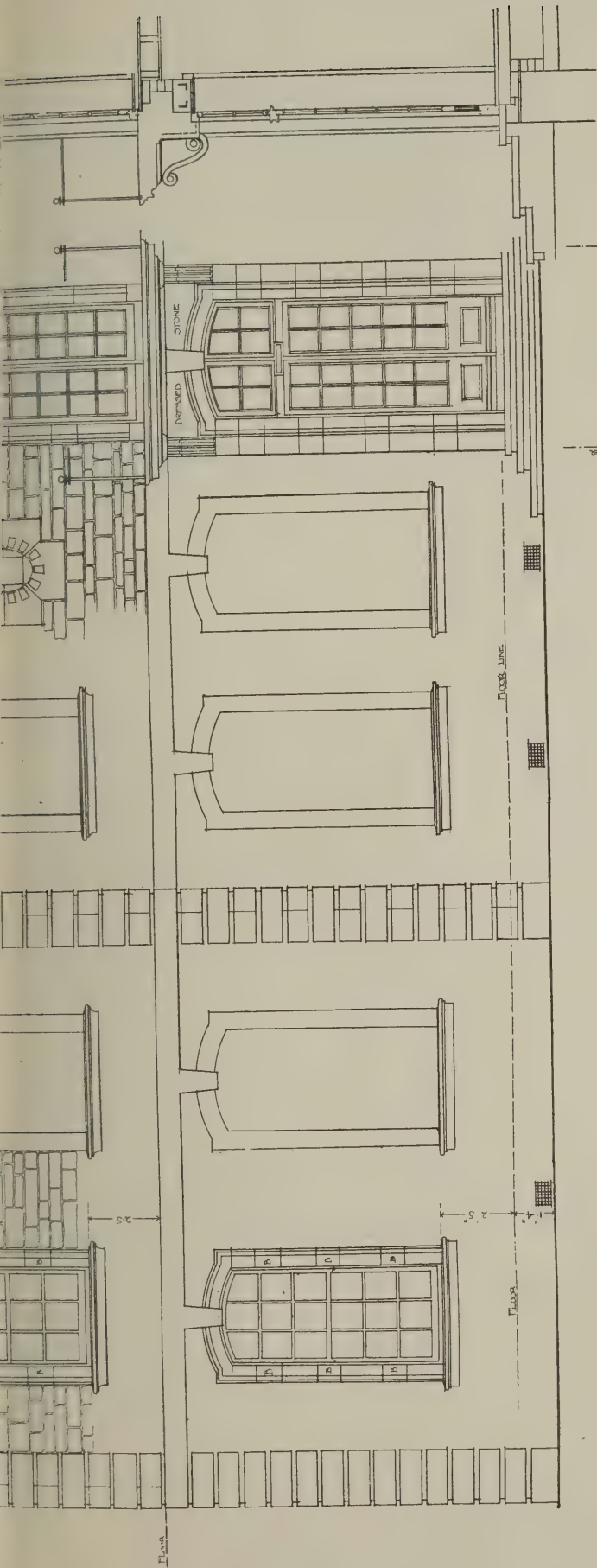


TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION: APPROVED DESIGN, SUBJECT IV. (a).—A SENATE HOUSE. BY R. DUCKETT.

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CONKWEIL GRANGE WILTS.





E. GUY DAWBER ARCHT
22, DUCKINGHAM STREET
ADELPHI W/C JULY 06

SCALE 1/2" = 1' 0" 0 1 2 3 4 5 6 7 8 9 10 15 20 FEET

WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS.—III. CONKWELL GRANGE, WILTS.
E. GUY DAWBER, F.R.I.B.A., ARCHITECT.

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Photos: H. Skyrme.

THE LEY FARM, WEOBLEY, HEREFORDSHIRE.



Photo: H. Skyrme.

THE LEY FARM, WEOBLEY, HEREFORDSHIRE:
MAIN ENTRANCE.



Photo: W. T. Hanman.

MONUMENT TO SIR W. PICKERING IN ST. HELEN'S
CHURCH, BISHOPSGATE, LONDON.

HOLIDAY COMPETITION.

On the preceding page we publish the last of the photographs selected from those submitted in the Holiday Competition. Three of them are by Mr. Herbert Skyrme, of Hereford, the fourth being by Mr. W. T. Hanman, of London, N. The following particulars relate to the illustrations:

Monument to Sir W. Pickering.

This monument is but one of many interesting subjects for the camera to be found in St. Helen's Church, Bishopsgate. The church, now sadly curtailed in size and hemmed in by the surrounding buildings, was once conventual, and covered a very large area. The monuments to the Crosbys, Marchants, Comptons, Greshams, and many others, range from Decorated to Renaissance in style, and are but too little known and visited. Sir W. Pickering was Queen Elizabeth's Ambassador to Madrid. He died in 1575.

The Ley Farm, Weobley, Herefordshire.

This fine example of timber architecture is often referred to as the work of John Abell, who was known to Charles I. and was appointed "one of His Majesty's carpenters." The principal front is of good design and well executed, but the interior at the present day does not offer anything worthy of attention. The "Ley" at an early period belonged to a family bearing that name, afterwards descending to the family of John Brugge, or Bridge, as is commemorated in the carved panel over the porch, together with the date 1589. The double tier of gables is unique. The building is now in the possession of Sir Joseph Verdin, who will take every care to preserve it.

FOOTPATH PHENOMENA ON
WATERLOO BRIDGE.

The town-going geologist, who daily crosses Waterloo Bridge on his way to business, has recently been in danger of losing one of the minor joys of life. Of what the pleasure consists may at once be stated. It is merely the character of the patterns on two or three of the numerous slabs of granite with which the footpath on the west side of the bridge is paved. And the ever-constant fear has been that the stones of this side-walk might be replaced by artificial material. This change has already been made on the opposite footway, but so far the treasured paving-stones on the west have been spared, except where small blocks of manufactured rock have been neatly let into the hollows worn by passing feet or fretted by the weather.

On damp mornings especially the eyes of the scientist are unconsciously directed twice or thrice towards the granite slabs, glistening under the film of moisture. To be more precise, writes Mr. Walter Johnson, F.G.S., in the "Academy," the granite contains large crystals of creamy-white felspar, each extending an inch or more in length, and in a few spots these crystals are seen to have a somewhat definite "set" or orientation. One of the slabs thus distinguished may be noted about a third of the river's breadth from the Waterloo bank of the stream. Here the crystals lie north-west and south-east, the bridge itself heading about north-north-west. Some two score yards nearer Wellington Street is another block in which the crystals are oriented from north-east to south-west, the stone evidently

lying reversed, as compared with the preceding specimen.

Whence did these huge granite prisms come? The answer is a little uncertain. We know that the soot-begrimed balustrades came from the oldest of the Aberdeen granite quarries, nearly a hundred years back, and it may be that the original pavement was hewn in the same district. But the "flags" must have been renewed more than once, and the particular stones on which we now look probably came from Devon or Cornwall. Most of the granite of which London Bridge, for example, is composed came from Heytor, on Dartmoor, while Cornish grey granite was used in the construction of the bridges at Blackfriars and Westminster. Let us suppose, then, that our Waterloo pavement once formed part of one of those granite tors which rise to heights of 1,000 or 2,000 ft. in the old kingdom of Damnonia in the West.

The granite tors were once molten and were cooled and solidified at great depths beneath the earth's crust. The fused material at first lay in a kind of subterranean reservoir, and though the upward forces drove the liquid into the surrounding and overlying strata in such a manner as to form veins and "sills," yet the contents of the cauldron did not reach the surface. As soon as the molten mixture began to cool, the component particles of the fiery fluid, still retaining freedom to move onward and to rotate, were attracted, like to like, by virtue of the mysterious laws of crystallisation.

It is a striking feature of these molten mixtures that the various minerals crystallise in due order, which, in general, is dependent on the temperature and the nature of the composition. In the special case of the granite of Waterloo Bridge Mr. Johnson supposes the felspar was the first mineral to consolidate. There must have been a gentle streaming movement in the material, and thus the axes of the crystals were able, in places, to assume a remarkable symmetry of position. Moreover, the crystallisation of the felspar determined the limits of the other minerals.

On Waterloo Bridge it is the attrition caused by the feet of the ever-hurrying throng which does the greatest mischief and which produces those cavities that the road-menders skilfully refill. And, alas! this constant abrasion must lead in the end to the removal of the natural curiosities which have been described.

AN EXTENSIVE WATERWORKS
FILTRATION SCHEME.

Situated between the Wessenden Valley Reservoirs of the Huddersfield Corporation and the Woodhead Reservoirs of the Manchester Corporation is the watershed of the Ashton, Stalybridge, Mossley, and Dukinfield Joint Waterworks Board. In the valleys at Greenfield, Chew, and Swineshaw are seven or eight huge reservoirs, which supply water to a population of 140,000 people, distributed over an area of fifty-two square miles. For some years past complaints of lead poisoning were prevalent in the Yorkshire part of the board's area, and to remedy this the board decided to undertake a scheme of filtration.

This work has been carried out at a cost of £30,000, and the magnificent filtration stations at Greenfield, Saddleworth, and Swineshaw—amongst the largest of their type in the kingdom—have been offi-

cially inaugurated. The two installations comprise thirty-six pressure filters, designed to purify collectively 5,352,000 gallons of water per day. The filters at the chemical plant have been supplied erected by Messrs. Mather and Platt, Ltd. of Manchester; the works having been designed by Mr. Fred I. Dixon, F.G.S., A.M.I.C.E., Mr. C. H. George, A.M.Inst.C.E., acting as assistant engineer. Practically the whole of the power in the filter houses is generated by water

THE WEATHERING OF PORTLAND
STONE.

An investigation into the weathering of Portland stone was initiated by Dr. L. Voieux, and is being made for the Coal Smoke Abatement Society. Its object, stated by Dr. J. S. Owens, F.G.S., A.M.Inst.C.E., at the Dundee meeting of the British Association, is to find the connection between smoke and the well-known deterioration by sulphating of stones containing a large proportion of calcium or magnesium carbonate when exposed to city air. The effect of weathering upon the strength of stones in tension and compression was measured. The stones were subjected to the following conditions for periods varying from 105 to 687 days: (a) Broken without exposure, (b) broken after exposure to natural conditions out of doors in the country and in London, (c) broken after having been kept indoors in the country and in London, (d) broken after having been exposed, while embedded in soot, in the country and London air.

The experiments are still going on, four series of stones up to the present have been broken, and the results are as follows: Series 1: Thirty-nine Portland stone briquettes, without reference to their bedding plane, were broken in tension. All these stones increased in strength, some more than others, thus confusing the issue; but the bedding in soot had a distinctly injurious effect on the strength. Series 2: Twenty-nine similar to Series 1 were broken in tension. The percentage of water present was noted, as its presence influenced strength adversely. Stones exposed in London showed a less resistance than those exposed in the country. Series 3: Eighteen stones broken in tension showed the presence of 4½ per cent. water—that sufficient to saturate the stones—reduced the strength by about 40 per cent. The stones being broken in tension the loss of strength could not be due to any form of bursting pressure by the water, as might occur with a saturated stone under compression. The results also show that in calculating as to the strength of structures built of stone the amount of water present should be taken into account. Series 4: Twenty-five 1-inch cubes of Portland stone were broken in compression. All these were dried before breaking, and the results show in all cases that exposure to London air, or embedding in soot, caused considerable loss of strength, when compared with stones exposed under normal conditions in the country. The compression tests were made in a Wicksteed machine, cardboard packing pieces being placed between the specimens and the compression plate, and the loads were applied at a uniform rate.

Further tests are contemplated.

IN PARLIAMENT.

(Our Press Gallery Representative.)

Buckingham Palace.

At the House of Commons last week, Mr. Wedgwood Benn informed Mr. King that it was proposed to begin the rebuilding of Buckingham Palace at the beginning of August next, and to complete the work in three months. The work would be done by contract.

Mr. T. J. P. Touche asked whether leading contractors would be given an opportunity of tendering for the work.

Mr. Wedgwood Benn replied that the contract for this work had been placed by the Queen Victoria Memorial Committee. It was not usual to put out to tender work of this kind in the personal occupation of His Majesty the King, it being desirable to employ workmen well known to the authorities. The builders of the new front of the triennial maintenance contract for the London district.

Mr. Bennett-Goldney asked if the design of the proposed new front had been approved by the First Commissioner of Works or by any responsible body of architects or artists; whether the drawings of the proposed elevation had been submitted to the present President of the Royal Institute of British Architects, to a committee of that body, or to the President of the Royal Academy; whether the proposed new front was paid for out of a memorial fund, the Government would have any control or supervision over the work, and whether this House would be permitted to have an opportunity of expressing an opinion upon the designs before they were finally decided upon; whether it was proposed to allow any competing designs to be sent in for selection from any other architects of high repute; and, if not, whether any of the defects of some of the more recent architecture at present disfiguring the other side of the Mall were likely to be repeated in the new front of the palace.

Mr. Wedgwood Benn, in a printed reply, stated that the design of the proposed new front of Buckingham Palace had been approved by the First Commissioner of Works. The design had not been submitted to any other person or authority, but the Office of Works maintained complete control and supervision over the work. The First Commissioner had arranged to place a sketch of the design in the tea room of the House. It was proposed to ask for any other designs.

Office of Works Designs.

Mr. King asked the Prime Minister whether his attention had been called to the criticism usually directed to designs accepted and plans adopted for public buildings and other undertakings by the Office of Works, and whether, in order to give public confidence in the work of that department and to ensure the best value, cost, and style in all future public works, he was prepared to introduce some method of securing the best possible advice and general approval, either by appointing a representative consultative committee or otherwise.

Mr. Asquith, in reply, said: The First Commissioner is responsible for the designs of all public buildings the erection of which devolves upon his department, and he is satisfied that so far as ordinary buildings are concerned no useful purpose could be served by the appointment of a consultative committee such as that sug-

gested. The First Commissioner feels that he can rely with confidence upon the experience of his trained staff. In the case of exceptional buildings, such as the War Office and the new public offices, it has been the practice to seek the assistance of architects of eminence outside the Department.

Temperature of the House.

Captain Murray having directed the attention of Mr. Wedgwood Benn to the suggestion that the air throughout the House of Commons should not, as at present, be kept at the same uniform temperature, and that the temperature of the inner lobby should be at least eight degrees lower than that inside the Chamber, Mr. Wedgwood Benn said there had not been a general complaint on this score, and the present system of ventilation did not permit of the latter suggestion being carried out. In reply to other questions, he reminded the House that several Committees had sat on the same subject during the last ten years, and the suggestions of the last Committee had been fully carried out at considerable expense.

Old Statue in Westminster Hall.

Mr. King asked for information concerning the statue, supposed to be of a certain monarch, recently erected in Westminster Hall over the door leading to the members' entrance.

Mr. Wedgwood Benn, in reply, said the attention of the Commissioners of Works had been drawn to three stone statues of kings in the Tufton Street Museum, which had been removed from Westminster Hall. They were well-preserved works of the end of the fourteenth century, but in the absence of any symbols or accessories it was not possible to say what kings they represented. The First Commissioner now proposed to bring them back, and he had one set up experimentally in Westminster Hall. Mr. King asked why the statue was put in a position where it could not be properly seen, and whether it was meant for an internal position. Mr. Wedgwood Benn said the statue was intended to be put at a height of 20 ft. above the spectator. It was originally placed on the north wall at that height. The report of the inquiry was that from the state of the statue, it had been placed in an internal position.

Rebuilding of Regent Street.

Mr. Fell asked what were the questions submitted to the Committee appointed to consider the proposed rebuilding of Regent Street and the Quadrant; and if it was made a condition of the rebuilding that the height of buildings to be erected should not exceed that of the present structures, so that the sunshine and light and air of the street should not be interfered with.

Mr. Masterman (Secretary to the Treasury) in reply said: The Committee's terms of reference are as follows: "To consider the design to be adopted for completing the rebuilding of the Quadrant, Regent Street, due regard being had to aesthetic considerations, commercial requirements, and the interests of the land revenues of the Crown." The point raised in the last part of the question will no doubt be carefully considered by the Committee.

Mr. Fell asked whether there was anything to be added to that to allay the anxiety felt in many quarters that business might be damaged. Mr. Masterman said he thought that was fully covered by the terms of the reference.

Green Park and Piccadilly Widening.

Mr. Wedgwood Benn informed Captain Murray that the First Commissioner did not intend to sanction any scheme to give up any portion of the Green Park for the purpose of widening Piccadilly.

Building By-laws.

Sir Arthur Griffith-Boscawen asked the President of the Local Government Board whether he could state what response he had had, if any, to the circular issued last month to district councils regarding building by-laws; whether any district councils were taking steps to amend unsuitable by-laws; and whether he possessed any powers to compel local authorities to amend their by-laws in cases where they were so framed as to make the building of cottages unnecessarily difficult and costly.

Mr. John Burns in a printed answer stated: I have not yet received as a result of the recent circular any definite proposals for amendment of by-laws, but a large number of local authorities have made application for copies of the Board's model series of by-laws, and these authorities are no doubt considering the question of adopting by-laws suitable to their districts. As regards the last part of the hon. member's question, I may refer him to Section 44 of the Housing and Town-Planning Act, 1909.

Stacking of Timber.

Mr. Remnant asked the Home Secretary whether, in view of recent fires in London and elsewhere, he could introduce legislation prohibiting the stacking of timber in yards or buildings adjoining hospitals or other large institutions. Mr. McKenna replied that he was in communication with the London County Council, and he would inform Mr. Remnant of the result in due course.

The New Delhi.

Mr. King asked whether the report of the Committee appointed to advise on the site planning of the new Delhi would be published shortly; what steps would be taken to carry out the promise that the planning and designing of the public buildings of the new Delhi would be considered with the greatest deliberation and care; and what means were being taken to consult the best native Indian opinion and those practically experienced in Indian building as to the style and character of the proposed new buildings in Delhi.

Mr. Harold Baker, who replied in the absence of the Under-Secretary for India, said: The Committee have not submitted any report that could be conveniently published. When their inquiries are completed and their final recommendations submitted, the Secretary of State will consult the Government of India as to publication. No decision has yet been come to with regard to the matters mentioned in the second and third parts of the question, but they are engaging the closest attention of the Government of India and of the Secretary of State.

Calcutta Public Buildings.

Mr. Harold Baker stated in reply to Sir J. D. Rees that no decision had yet been arrived at as to the future use of the Imperial Secretariat, Belvedere, and other public buildings in Calcutta, but Belvedere, which belonged to the Bengal Government, was being temporarily used for the Victoria Memorial collections.

SOCIETIES AND INSTITUTIONS.

LIVERPOOL ARCHITECTURAL
SOCIETY.*The President and the St. George's Hall
Podium.*

Mr. Hastwell Grayson, president of the Liverpool Architectural Society, in the address with which he inaugurated the 65th session last week, said: The topic of the moment is undoubtedly the fate of the St. George's Hall podium. The controversy, which has now lasted two years, should be settled during the winter. In the meantime the interest of the public has been most gratifying. Quite a number of people are sincerely trying to understand the points at issue. Unfortunately, many believe that plain walling represents cheapness and shows a lack of imagination, and they cannot understand what we mean by epithets such as "repose" and "strength." The difficulty of appreciating the simple is perhaps a heritage from the Gothic revival.

The man in the street remembers that one of the most delightful characteristics of Gothic is its adaptability to an irregular site. He forgets that Renaissance architecture is not so elastic, and that Greek is infinitely more exacting. The latter demands and insists on uniformity in both site and surroundings, and ample spaciousness in these surroundings. This truth was obvious enough to Elmes and Cockerell when they designed St. George's Hall, but it is hard to explain to laymen. Elmes did not make the chief entrance at the southern end of the hall because it was lacking inside and outside fore and aft in vista and in spaciousness, but more especially because on the east front there was a fine level "place" with ample room for a dignified approach. His plan is logical, scholarly in the details, and admirably suited to the plan and to the site. Notice his treatment of the steps to Lime Street. He gives two flights of ten steps each separated by a 10 ft. landing. These steps have a bare 6 in. rise and 15 in. tread. They are completely in scale with the colonnade, but the actual steps seem fully steep when compared with those at the west and north entrances to St. Paul's Cathedral, which have 14½-in. treads and 5-in. risers; or those at the main entrance to the British Museum, where the treads are also 14½ in. but the risers 5½ in. At the south end of St. George's Hall, Elmes maintained the same level of the colonnade for the portico; a different level might have introduced an element of restlessness. The portico stands less than 40 ft. back from St. John's Lane and is about 29 ft. above it. For a descent with steps to match those in front of the colonnade at least sixty would have been required. The space necessary for sixty steps with adequate landings is about 120 ft.

It is not surprising therefore that Elmes decided that no descent to St. John's Lane was practicable. Instead, he formed a spreading base, composed where seen in perspective of eight blocks of masonry, 15 in. high and 2 ft. 5 in. wide. They, again, are wonderfully in scale with the whole design. Where not seen in perspective, close to the wall east and west of the portico and on the axis, these blocks are divided into two, and make an uncomfortable and undignified stairway, perhaps just good enough for the few who use

them. Below the last step there is a stone terrace 23 ft. wide, ending in the podium—a massive battered wall of masonry, unbroken for its full length of 160 ft. The spreading base, the platform and the podium are logically just as much part of the composition as the sculpture in the pediment. They blind the eye to the fall in the ground, they separate the building from the turmoil of a busy thoroughfare, and, above all, they add strength and power to the design. The plan temporarily approved by the City Council destroys all Elmes's carefully-thought-out efforts. The podium becomes two flanks, two pedestals and a space. The platform is split into three landings. A very dangerous flood of forty-seven unnatural steps flows over on to the sidewalk. The aloofness of the hall from the tramways and traffic is gone. And why? Who wants to climb forty-seven steep steps? Is there really no other site available for the proposed Royal memorial? Will an equestrian statue blocking the traffic, placed on one side of the steps, almost on the top of a public convenience, meet with the approval of the Royal Family? No answer has ever been or can be given to these simple questions.

There are only three possible benefits. The first is to the building, for the abruptness of the finish between the podium and

the stone-yard will seem less marked. The second is to ourselves, for we have been unofficially informed that in the Local Government Board inquiry evidence of architectural character will be admitted. This will form a most valuable precedent. Far too many so-called public improvements have been passed where doubt of utility has been the excuse for unnecessary vandalism. The third benefit is to the citizens of Liverpool. The controversy has opened their eyes to the world-wide fame of St. George's Hall. It is the one treasure that Liverpool possesses. When Harvey Lonsdale Elmes ended his brief life of thirty-three years he had gained admittance to that select band who have created something to be admired and studied, not merely by their neighbors and contemporaries, but by students of nations and all times. He was not, of course, one of the world's greatest men; he was not even a pioneer. He was the last of that scholarly band of English architects who worked steadily on in the footsteps of Inigo Jones until they were snuffed out by the Gothic revival. Elmes carried Classical architecture just one definite step forward. He had a very good opportunity, and he stamped it with the hallmark of the "grand manner." A native art worker since Wren, except possibly Sir Joshua Reynolds, has left su-



G. HASTWELL GRAYSON, M.A., F.R.I.B.A.

President of the Liverpool Architectural Society.

world-wide fame behind him. It is therefore not surprising that the Council of the Royal Institute of British Architects has unanimously resolved to protest against any unnecessary meddling with St. George's, and that a similar resolution has been passed by the Historic Society of Lancashire and Cheshire; and that individual requests have been received from Europe and America. However, thanks to the generosity of numerous members and friends, there are ample funds for fighting the City plan whenever an opportunity presents itself. My own impression is that no opportunity will occur. The scheme is slowly dying. It was never popular, and authors will be glad to quietly let it pass.

Some lessons, however, have been taught by both the City Council and the Historic Society. No more such schemes for altering landmarks will be launched at the suggestion of an eminent sculptor. Local architects, whom in the past the City Council has gaily overlooked, are not likely to be permanently ignored. As defenders of the *status quo* this society has earned some respect and aroused some local patriotism. In the next big public improvement is undertaken, the ratepayers will expect Liverpool architects to be consulted.

MANCHESTER SOCIETY OF ARCHITECTS.

Mr. Halsey Ricardo on "Growth in Architecture."

At a meeting of the Manchester Society of Architects on October 24th Mr. Halsey Ricardo lectured on "Growth in Architecture."

Professor Lethaby's little book on architecture, Mr. Ricardo said, there is a pregnant statement, "No art that is done by one man deep is worth much. It is only by a thousand men deep." It is the fashion to accentuate the names of the architects of famous masterpieces, to regard them as the sole creators and originators of their work—to regard them as men as Brunelleschi, Michael Angelo, and others as creative ends in themselves—as independent phenomena—individually affected and controlled by the tendency of their time. Yet, from another point of view we may look on them as resultants rather than causes. Their environment has produced them—they are their environment.

The stream of life is immortal, and the various mortal shapes in which it is manifested are the outward signs of its current, owe their characteristics to the combination of the stream at the moment of its appearance. In our tributary of this stream, the building instinct is immortal. Its manifestation at any period depends on the ideals, the structural resources of the time. The dominant determinant factor is the main stream of life. The history of the world is shown by its art—its faithfulness exceeding all other restraints—with an eloquence unpremeditated by the craftsman.

Mr. Ricardo then proceeded to give by a masterly view of the history of art, commencing with a contrast between the Assyrian bas-reliefs—with their sense of cruelty, strife, and oppression—to the Egyptian hieroglyphs, expressing a belief and hope in a future life—their light in nature and animal life. Especially lucid was the account of the passing of Mediaevalism and the dawn of the Renaissance, the lecture emphasising the wrong tendency of the craftsman of the Middle Ages to perfect his own craft, losing it individualistic excellence, losing

his view of the whole work, and the characteristic of the mediæval genius.

The emergence of the specialist paved the way for the revival of learning. Coming to modern times, Mr. Ricardo maintained that the impress of our social, religious, and public life on any example of our work is greater than that of the individual architect who designs it. The buildings of our age express its temper, and posterity will look back upon our present period as one of high endeavour, even if we have failed in high endeavour.

GLASGOW INSTITUTE OF ARCHITECTS.

The quarterly general meeting of the Glasgow Institute of Architects was held last week in the secretary's chambers, 115, St. Vincent Street, Mr. John Watson, vice-president, in the chair. The secretary reported what the council had done as to the following among other matters which had been dealt with since last meeting: (1) Housing and town planning conference; (2) Royal Institute requiring full affix to be used by licentiates; (3) several public competitions, the conditions of which have been found unsatisfactory, were barred by the institute, but in some cases the conditions were amended; (4) deputation to town council regarding proposed carrying out of extension of municipal buildings by city engineer, which had the effect of getting the town council to decide that competitive plans and designs be invited from outside architects for the erection of these buildings; (5) revision of rules for measurement and conditions of contracts; (6) report that Aberdeen Society was prepared to recommend a special rule as to architectural competitions on the lines recently adopted by the Glasgow Institute. The Glasgow Institute prize for the best set of measured drawings and sketches by pupils in the Royal Technical College has been awarded to Mr. A. G. Glen. The action of the council on these matters was approved.

THE LONDON ASSOCIATION OF MASTER DECORATORS.

At the quarterly general meeting of this Association, held at the Holborn Restaurant, Mr. J. Anderson, President, who was in the chair, explained that a report had been drafted to be submitted to the London County Council Educational Committee in answer to various questions they had raised in connection with the technical schools throughout London. A circular had been issued to the members of the Association asking for the information required.

Mr. A. S. Jennings said the committee might find it advisable to have one of its members visiting the schools at various intervals. He had recently attended a lecture at Leicester, and there the scheme worked admirably. At every meeting of the class one member of the committee was present.

The Chairman said it was noticed at the various institutes that wherever there were masters taking an interest in the classes those classes were very successful. The subject was referred to the Education Committee, with power to act. Mr. Jennings being added to the committee, and the committee being given power to co-opt any member they thought advisable.

The Chairman said the committee considered it was a great mistake that painters should apply for employment without any means of proving their qualifications, and they had considered the

question and more or less approved of cards of employment which painters could carry showing at least that they had worked for a firm for a certain time. There was nothing on the card to show the character of the man. It was, however, considered that the Insurance Act would more or less take the place of the cards, but then it was discovered that an insurance card was not quite suitable, as nothing was allowed to be put upon it except the date. The committee had reconsidered the question, and having regard to the fact that, owing to the multiplicity of insurance cards, masters had quite enough cards to deal with for the present the committee recommended that the matter be postponed for the time being.

The consideration of suggestions as to conditions of foremen painters' employment, rate of pay, etc., was referred to the general committee.

It was agreed that the Association should have two Vice-Presidents, and Mr. Wilkinson was unanimously elected.

A letter was read from the Paint and Varnish Society stating that at a Council meeting of the Society, held on August 20th, the Society expressed its willingness to hold a joint meeting with the members of the Association on the second Thursday in March, on the understanding that the Association would supply the lecturer. It was agreed that the secretary should write to the Paint and Varnish Society intimating that the Association would be pleased to arrange for a meeting with them in March, and stating that the lecture would deal with the troubles met with in the materials used. The actual title was left to the committee dealing with the subject, and the writing of the paper was placed in the hands of the President.

THE ARCHITECTURAL ASSOCIATION.

List of Awards: Session 1911-12.

A.A. Silver Medal, R. M. Pigott; Banister Fletcher Bursary, V. O. Rees; Architectural Union Company's Prize, W. J. Palmer Jones; Class of Design Prize and Bronze Medal, H. J. Higgs; A.A. Essay Prize and Silver Medal, W. G. Newton; Herbert Batsford Prize, W. S. George; A.A. Travelling Studentship, First Prize, not awarded; Second Prize, A.A. Travelling Studentship, B. W. Ridley; History, First Year Day School, M. T. Waterhouse equal with A. S. Furner in Studio Prize; Construction, First Year Day School, Freehand Drawing, First Year Day School, equal with M. T. Waterhouse in Studio Prize, A. S. Furner; Travelling Studentship, Second Year Day School, H. J. H. Dicksee; Special Prize given by Headmaster, Second Year Day School, H. G. Satchell; End of Session Test, Second Year (prize given by the President), E. C. Davies; Book Prize, First Year Evening School, H. A. N. Medd; Second Prize, First Year Evening School, F. W. Mackenzie; Scholarship, Second Year, first place in Materials, first place in History, J. B. M. Walch; Book Prize, Second Year Evening School, E. K. Smith; equal Third Year Evening School Prize, D. J. Gordon and T. W. Dowsett; Travelling Studentship, Fourth Year Evening School, A. T. Hardman; Second Prize, Fourth Year Evening School, first place in History, T. F. Ford and T. F. H. White—equal.

The following students have been awarded the Association's Two Years' Course Certificate: E. C. Davies, H. J. H. Dicksee, J. S. Hodges, H. G. Satchell, H. G. Tebbutt, R. S. Wallace, W. W. Locke, A. F. Hooper.

COMPETITIONS.

University College, Dublin.

The awards by the assessor in this competition, Mr. H. T. Hare, F.R.I.B.A., are announced as follows: 1, Messrs. Doolin and Butler, Dublin; 2 (£150), Messrs. Arthur and H. H. Hill, Cork; 3 (£75), Mr. T. J. Cullen, Dublin. There were twenty-two competitors.

New Council School, Chorley.

More than seventy sets of designs having been submitted in this competition, it is evident that some weeks must elapse before the awards of the assessor, Mr. J. Brooke, F.R.I.B.A., can be announced.

Dublin Municipal Buildings Extension.

It is announced that for this competition the assessor appointed is Mr. Albert E. Murray, A.R.H.A., F.R.I.B.A., President of the Royal Institute of Architects of Ireland.

LIST OF COMPETITIONS OPEN.

NOVEMBER 25. SCHOOLS, NEWCASTLE-ON-TYNE.—Particulars of this competition, which is limited to local architects, are obtainable from the Education Office, Northumberland Road, Newcastle-on-Tyne.

NOVEMBER 29. BRANCH LIBRARY, LANGSIDE, GLASGOW.—Premiums £50, £30, and £25. Assessor, Mr. A. N. Paterson, A.R.S.A. Particulars from Town Clerk, City Chambers, Glasgow.

NOVEMBER 30. SWIMMING BATH, BALHAM.—This is the extended date for the reception of designs in this competition, which are to be sent to the Town Clerk, Council House, Wandsworth. Conditions (£1 is.), Mr. P. Dodd, Surveyor to the Borough Council, M.Inst.C.E., 215, Balham High Road, S.W.

DECEMBER 1. ROYAL PALACE AND LAW COURTS, BULGARIA.—Architects desiring to take part in this competition should communicate with the Commercial Intelligence Branch of the Board of Trade, Basinghall Street, E.C.

DECEMBER 2. SCHOOL BUILDINGS, CARLISLE.—Particulars, City Surveyor, Carlisle.

JANUARY 8, 1913. EXTENSION OF MUNICIPAL OFFICES, DUBLIN.—The competition for the enlargement of Dublin Municipal Offices, in Castle Street, is restricted to practitioners in Ireland. The cost is estimated at £55,000, and the author of the selected design will supervise the work. Second premium, £150; third, £100. Latest day for conditions, December 2. Apply Municipal Offices, Dublin. Deposit £2 2s. Mr. Albert H. Murray, A.R.H.A., has been appointed assessor.

MARCH 1, 1913. MUNICIPAL BUILDINGS, RANGOON.—The committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars £1 (returnable) may be obtained from the London Agents, Messrs. Ogilvy, Gillanders, and Co., Sun Court, 67, Cornhill, E.C.

MARCH 1, 1913. CITY HALL, WINNIPEG.—Particulars from Mr. A. Waugh, City Hall, Winnipeg.

NO DATE. WORKMEN'S DWELLINGS, DURSLEY.—The Parochial Committee of the Dursley R.D.C. invite designs for workmen's dwellings, of which about thirty are to be erected. Particulars from Mr. J. Collett, Clerk to the Parochial Committee, Dursley.

NEWS ITEMS.

Indisposition of Mr. Henry T. Hare.

We regret to learn that Mr. Henry T. Hare, F.R.I.B.A., who has been suffering in health for some time, is considered not yet sufficiently recovered to make it prudent for him to return to London.

R.I.B.A. Inaugural Meeting.

At next Monday's inaugural meeting of the 1912-1913 session of the Royal Institute of British Architects, when Professor Reginald Blomfield, A.R.A., will deliver his presidential address, there will be on view a collection of old Italian and French architectural drawings.

Partnership.

Mr. John Brooke, F.R.I.B.A., president of the Manchester Society of Architects, has taken into partnership Mr. C. Ernest Elcock, late of J. M. Porter and Elcock, of Colwyn Bay, and for the future the practice will be carried on under the style of "John Brooke and Elcock."

Javanese Architecture.

Messrs. Macmillan and Co. will publish shortly a work on ancient Javanese architecture and sculpture, by Mr. J. F. Scheltema, under the title "Monumental Java." The author, long resident in the country, has not depended entirely upon personal observation and knowledge, but has also made use of information gathered by other writers. The work contains photogravure plates and other illustrations.

The Aldwych Improvement.

It is recommended by the London County Council Improvements Committee that, in connection with the erection of the Australian Commonwealth Buildings, Melbourne Place, the "spur" street on the Strand "island" site shall be so constructed as to provide through access for both vehicular and pedestrian traffic between the Strand and Aldwych. An alternative proposal afforded no facilities for through vehicular traffic, but for the provision of steps leading into Aldwych. The committee also report that the designs of the Australian Government buildings have been altered so as to allow of the addition of an extra storey in the roof on the Strand and Aldwych frontages.

Building Trade Unions Decide to Amalgamate.

A conference was held last week at Essex Hall, London, E.C., of representatives of unions admitting workers engaged in the building trade, to consider the results of the ballot which has been taken by twenty unions on the subject of amalgamation on a scheme prepared in July last. Mr. Will Thorne, M.P., presided, and the proceedings were private. At the conclusion it was stated by Mr. C. W. Bowerman, M.P., the secretary, that the ballot figures taken by ten unions showed a large majority in favour of the principle of amalgamation. It was decided that the various unions should be invited to send representatives to another conference for the purpose of drawing up a full scheme

of amalgamation. The unions which have decided to join the movement are the Amalgamated Carpenters and Joiners, Manchester Bricklayers, Plumbers, Stonemasons, National Union of Builders, Labourers, United Builders' Labourers, National Union of Bricklayers, Stonemasons, and Paviers, and Painters and Decorators.

The Rebuilding of a Famous London Bank.

Lombard Street, the banking headquarters of the world, would hardly be recognised by its frequenters of a generation back. No. 67, the house of Messrs. Glyn, Mills, Currie, and Co., is the latest example of the extensive rebuilding which has transformed the street. It is a corner site, and the Lombard Street front is to be refaced. The rebuilding proceeding piecemeal, so that there shall be no interruption of business.

Proposed New London Concert Hall.

A new concert hall is to be erected on a site close to Queen's Hall. It is between Queen's and St. George's Halls, Oxford Circus, and will hold 1,500 people. A feature of its construction will be a platform that can be expanded so as to hold full orchestra or, contracted to the size requisite for a pianoforte or vocal recital. Its design, apart from its size, will provide the arrangement of audience and artists necessary for the intimate conditions of performance without orchestra while being of workable dimensions when an orchestra is employed. It will probably be called the Langham Hall. It is understood that the plans have been passed by the London County Council.

OBITUARY.

Mr. W. F. Unsworth, F.R.I.B.A.

We regret to learn, through the R.I.E. "Journal," that Mr. W. F. Unsworth, F.R.I.B.A., of Petersfield, died suddenly from heart failure on October 6th, aged sixty-one.

COMING EVENTS.

Friday, November 1.

Birmingham Architectural Association. Mr. George H. Oatley, F.R.I.B.A., on "Fountains Abbey."

Monday, November 4.

Royal Institute of British Architects. Presidential Address by Professor Reginald Blomfield, A.R.A., at 8 p.m. Architectural Association (Camera, Sketch and Debate Club).—Papers by Mr. Bart Tunnard and Mr. H. E. Marshall at 8 p.m.

Monday, November 11.

Architectural Association.—Mr. John Marshall on "Marbles Used in Greek, Roman, and Byzantine Buildings," at 8 p.m.

Bristol Society of Architects.—Mr. Graham C. Awdry, F.R.I.B.A., on "Some Practical Remarks to Pupils, Architects, and Young Architects."

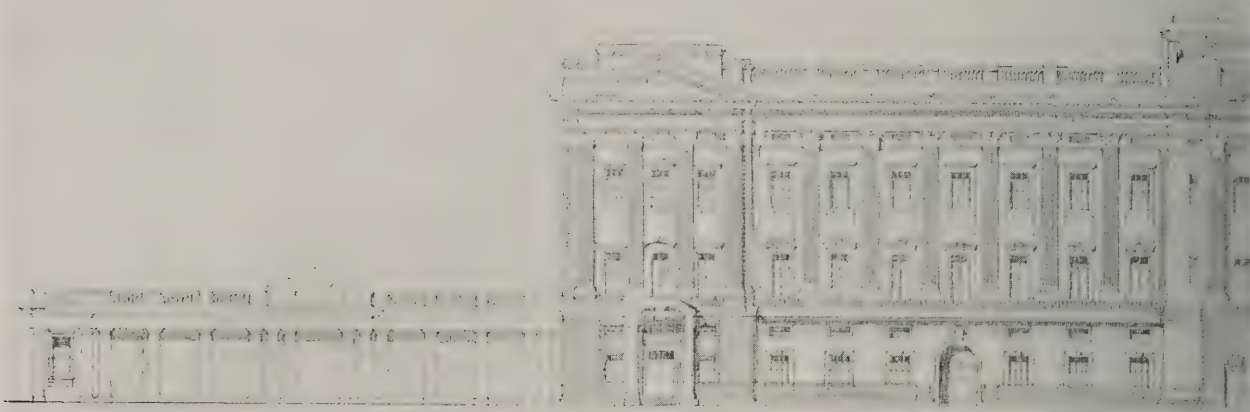
Tuesday, November 12.

Royal Sanitary Institute.—Discussion "The Report of the Departmental Committee on Intercepting Traps and House Drains," at 8 p.m.

Wednesday, November 13.

Manchester Society of Architects.—Papers by Mr. J. H. Worthington, M.A.R.I.B.A.

- BUCKINGHAM PALACE
ELEVATION TOWARDS THE MALL AS PROPOSED



BY SIR ASTON WE

BUCKINGHAM PALACE
ELEVATION TOWARDS THE MALL AS EXISTING



ELEVATION TO

BY EDWARD

THE FAÇADE OF



B. C.V.O., R.A.



THE MALL

ORE (1837).

INGHAM PALACE.

THE ARCHITECTS' & BUILDERS' JOURNAL.

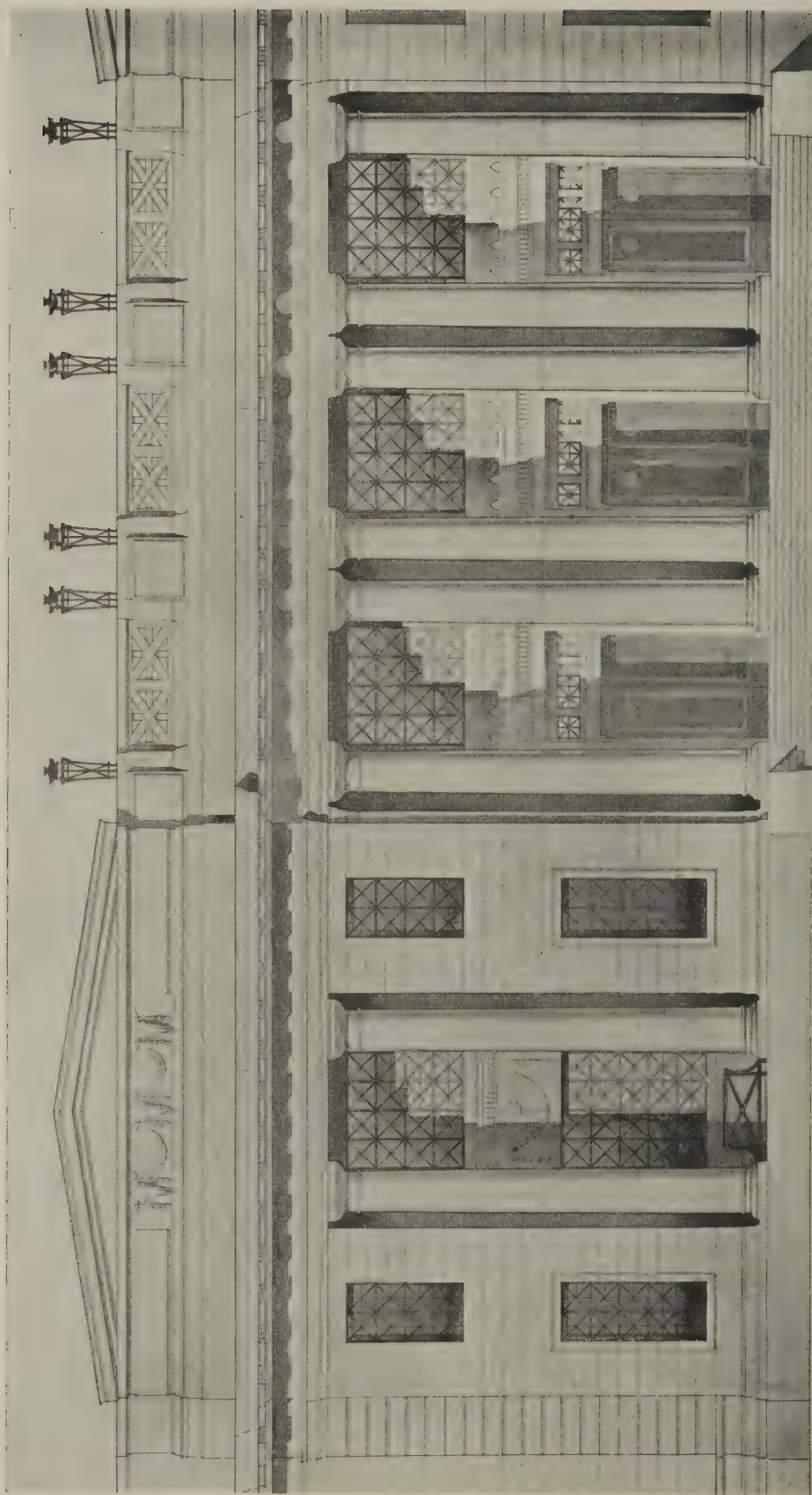
Wednesday, November 6th, 1912.

Volume XXXVI. No. 929.



*Ara antica di marmo ornata di finissimi
intagli, e sculture. Si vede nel Palazzo
detto la Farnesina alla Longara.*

(From Piranesi.)



DUBLIN UNIVERSITY COLLEGE COMPETITION: DETAIL OF DESIGN PLACED FIRST.
DOOLIN AND BUTLER, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

NOVEMBER 6th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 929

The Institute and Its New President.

THE Royal Institute of British Architects has been happy in the seventy-eight years of its existence in having many distinguished artists, scholars, men of affairs among its presidents. Rarely, however, has it had the good fortune to have at its head a man who combines such singularly wide attainments in arts and letters with so picturesque and powerful a personality as that of its new president, and it is fortunate indeed for the Institute that Professor Blomfield should occupy the chair at this exact moment of its history.

The Institute is now pledged to the policy of registration; that is to say, to the hall-marking, in one way or other easily discernible by the general public, of the competently trained architect, and it is a policy which among architects at large rightly commands respect. There may be differences of opinion as to how far it is feasible in law to exclude anyone from the practice of an art, but most people are now agreed that it is highly desirable for the public to know early the antecedent training of the man they propose to employ. The public cannot always in architecture, as in painting and sculpture, see beforehand specimens of the artist's work; and even if it could, it could not be in a position to judge of their structural soundness. Least in architecture, of all the arts, is there a facility a heaven-sent blessing. Inspiration there must always be in anything worthy of the name of art, and technique is equally necessary for efficient expression, and technique in architecture involves a more strenuous course of study than technique in any other art. It means for the architect, as it does for the painter and sculptor, a facility and power of composition and all that that implies; but in addition it means for the architect to-day an expert use of the increasing accumulation of scientific facts and a realisation of public needs which is at once the peculiar strength and the peculiar difficulty of his art. Professor Blomfield, therefore, rightly makes efficient training the keynote of his admirable address, which we publish elsewhere in this issue.

If this new hall-marking of the architect is to be of any service to the public, which is its real and ultimate justification, it must be proof of competency, or at least a safeguard against incompetency in the technique of architecture. It must mean both that the architect knows how to construct with safety and to design without those lamentable lapses into bad taste we see on every side. It implies, therefore—and this should be frankly admitted—a raising of standards and not a lowering of them. It means, as Professor Blomfield sees, an acknowledgment that our educational methods in the past have been insufficient. Apprenticeship must everywhere be supplemented by the more thorough and scientific training of the school. The president takes credit to the Institute, and rightly, for the intimate connection it has established with the recognised schools of architecture in

the centres of population. But in order to make these schools effective, and through them to bring about this new standard of worth which Registration should imply, steps must be taken to bring home to the architect, the student, and the parent their essential value. At present perhaps one-tenth of the total student population in architecture passes through those schools. Except through the indirect influence of prize drawings and publications, they hardly leaven the lump. Of what use is all this elaborate machinery of external examiners and boards of architectural education, to say nothing of the University endowments, if the vast majority of students are not taught to avail themselves of them?

It was to the establishment of the great medical schools the medical profession owed its advance in standard, and to which it owes its present position in public esteem. An examination system, however much it is stiffened up, if unconnected with training, is no substitute. Already the majority of students who come up for the Institute examinations, even at this present standard, are returned. The recent establishment, under Professor Blomfield's Chairmanship of the Board of Architectural Education, of a preliminary series of designs, to be worked to a given programme at given times, before the student can present himself for admission to the Final Examination, is a step in the right direction. It is a recognition of the principle that evidence of training in the essential subject of design—after all, the chief object of an architect's life—rather than evidence of cramming in non-essentials, is the main consideration.

That training in design can be given in a school and should be the real objective of school work is now hardly disputed. We have suffered too long from the theory that the power to design at every stage is an individual God-given gift, mysterious and incommunicable. No doubt it is so in its higher manifestations. No amount of training can make a poet, but we could all with a little trouble become respectable verse makers. There was a time when most people were. So with architecture, there is a certain standard of competency below which a school-trained man never sinks. We see this peculiarly well illustrated in American architecture. It is not the few outstanding works, like the Pennsylvania Railway Station and the Alleghany War Memorial, which constitute its present greatness, but the innumerable banks, blocks of offices, city halls, and libraries which reach a level of competency, scholarship, and resource rare in this country. A high level of competency such as distinguished the Georgian era in England or the Louis Seize era in France is more valuable to a nation than a few brilliant originators who break up a tradition and leave the mass of mankind without light or guidance. The latter is the phase through which we have been passing and the only way out seems to be the modern equivalent for tradition which America

and France have taught us—training in schools of architecture. That is why it is so important that the school should be properly organised and should realise clearly the kind of design it intends to teach. If the school is to take the place to-day that tradition took in the eighteenth century it can only do so when its type of teaching is clear, even dogmatic. It is in this way that the *École des Beaux Arts* has done its great work for French architecture, and it is in a similar way by focussing architectural thought that the new British School at Rome may, we hope, do a similar work for us.

It is, therefore, because we are anxious that this registration movement, which provides so powerful a stimulus, should be used to maintain a high level of endeavour for the art of architecture, and not a low level of political professionalism, that we welcome so warmly Professor Blomfield's appointment to the Institute Chair. We may venture to say that at the present moment no other man sums up so well in his own person our ideal of the complete architect. To the broad philosophical outlook which a first-class honours degree in *literæ humaniores* at Oxford implies, and to the practical sense necessary to the successful carrying on of a large practice, Professor Blomfield adds the enthusiasm of the artist for creative work and of the scholar for the love of knowledge for its own sake. Under his guidance Registration may well mean in the end an incalculable gain to our art. With such a man at the helm, there is every reason to believe that the Institute in setting its course for Registration will avoid the quicksands of mere professional expediency and reach the safe harbour of increased architectural attainment, where alone awaits the reward of increased public esteem.

C. H. R.

Dublin University College Competition.

THE competition for the new buildings for the National University College at Dublin, which was restricted to architects practising in Ireland, resulted in the presentation of twenty-two schemes, from which the assessor, Mr. Henry T. Hare, F.R.I.B.A., has made the following award: First and commission, Messrs. Doolin and Butler, Dublin; second and premium of £150, Messrs. A. and H. H. Hill, Cork; third and premium of £75, Mr. T. J. Cullen, Dublin. Honourable mention: Messrs. O'Callaghan and Webb, of Dublin, and Messrs. Batchelor and Hicks, of Dublin.

The buildings required were to house all the many schools of a modern University, and, in addition, a library and a large examination hall for collegiate purposes only. The sum available for building was only £160,000—in our opinion entirely inadequate to provide a structure worthy of its national importance; and this figure did not include fittings.

The site of the new buildings is defined on the north and west sides by boundary walls, and on the south and east by Hatch Street and Earlsfort Terrace respectively. Unfortunately, neither of these two roads is of any magnitude or importance, and from no point of view is there a possibility of a vista being obtained.

The problem of designing a university that is to house merely students pursuing a course in either Arts or Science is in itself a sufficiently difficult task. When the matter is complicated by the inclusion of a complete medical school, the difficulty is greatly increased. In the present instance the required partial retention of the existing buildings, and the use of them during the completion of the new structure, considerably hampered the competitors. However, in this connection it is only fair to point out that the conditions expressly stated that the award would be made upon the best schemes ultimately, even if some temporary

inconvenience were involved. Notwithstanding this concession it did not surprise us to find that a majority of competitors, while showing a commendable spirit in tackling the work, failed lamentably in a way naturally outside their province. On the other hand the first two designs show evidence of a more than superficial knowledge of the requirements of such a group of buildings.

Now it appears to us that the manner in which we would approach a problem of this character depends to a large extent upon the idea one possesses of university life; for such a building as this must stand for something more than utility: its very design must have a symbolic meaning. Does the quadrangle of the examination hall typify the chief function of a university? Messrs. Doolin and Butler have chosen to support the examination hall, while Messrs. A. and H. H. Hill stand by the quadrangle. Much may be said for both conceptions. Although these two competitors have chosen different starting-points, they have both realised the necessity of providing for the medical school a separate courtyard or quadrangle.

Further points to be borne in mind were that many of the laboratories in the medical buildings require north lighting, and that entrances giving immediate access to the street were necessary in connection with this particular section of the scheme.

A criticism of the premiated designs appears on page 490 of this issue.

The first two designs show that their authors have been influenced to a very appreciable extent by the new school of architectural thought which has become associated in this country with the name of Liverpool and its University.

The new University College will signalise the re-ordination of University education in Ireland and the development of an Irish National University, which, as we have recorded in previous issues, architecture will not be neglected, since a vigorous effort is being made to found in it a Chair and School of Architecture that shall emulate the fine work of the same character that is already being done in England.

The Destruction of Leeds.

MR. BERNARD SHAW, we fear, like many another *litterateur*, has rather mixed ideas about architecture, if we may judge from an aphorism that the keystone of an arch is of no more importance than the coping-stone; but his "Revolutionary's Handbook" would appear to have had a fruitful effect on a well-known West Riding architect, C. B. Howdell. Mr. Shaw, speaking of Leeds, has already expressed the opinion that its only chance of salvation lies in some day being burned to the ground and rebuilt; and Mr. Howdell has founded a whole plan of campaign on that destructive basis. Mr. Howdell entirely agrees with Mr. Shaw, but thinks an earthquake would be required to complete the good work. For the rest, we may leave his own words to indicate the "St. John's Church," he says, which was built nearly three centuries ago, "is about the only building in Leeds worth saving. The Town Hall, although old enough to have become sanctified architecture, so to speak, is obsolete, and should be blown up with dynamite. We could then replace it with a building commensurate with the requirements of the city." saying this I am quoting the opinion of several of His Majesty's judges, who have been complaining of the building's deficiencies for the past twenty years. The man who would lead a troop of public-spirited citizens in the blowing up of some of the architectural atrocities which abut upon the square would be a patriot indeed. Leeds knows, therefore, what to expect if Mr. Howdell ever gets hold of the city.

THE R.I.B.A. PRESIDENTIAL ADDRESS.

BY PROFESSOR REGINALD BLOMFIELD, A.R.A.

THE opening meeting of the 1912-13 session of the Royal Institute of British Architects was held on Monday evening, when the new president, Professor Reginald Blomfield, A.R.A., delivered his inaugural address.

In this he dealt with four chief matters, namely, the position of the Institute, the position of the architect, registration, and education.

With regard to the first, he said that the Institute had never been so strong as it was to-day. Its membership, including Licentiates, had reached a total of about 4,700, in addition to the large class of Probationers and Students, from whom the members of the future would be drawn, and its financial position, despite the large expenditure incurred in purchasing the freehold of their premises and enlarging its accommodation, was also good; the existing debt was now reduced to about £9,000, which, by the annual surplus of income over expenditure, would during this and following years be liquidated at the rate of at least £1,000 per annum. There was much the Institute desired yet to do, but did not feel justified in embarking upon until their debt was cleared—such as a more ample expenditure on books for the library and the payment of the Board of Examiners, while registration, whatever form it might take, would certainly involve a good deal of expenditure. As a practical means of increasing the funds of the Institute, the president urged that all Associates qualified to do so should take up their Fellowship without further ado, and suggested that the senior Associates should give the lead.

The Position of the Architect.

The position of the architect as a professional man has given ground for a good deal of anxious consideration in the last year or two. Adverse verdicts have been given in the Courts, which appear to saddle us with unfair and impossible responsibilities, and there can be no doubt that the position of a practising architect to-day is more difficult than it was forty years ago. He is expected to know a great deal more, and to do a great deal more for his money, than was expected of his predecessors in the halcyon days of the 'seventies. Applied science has developed so fast and in so many directions that it is impossible for an architect to keep pace with every branch of it; and, beside all this, he has his own art to master. For when all is said and done, the first business of an architect, that which differentiates him from other men, is his power and knowledge of design, and that, in the chaos of modern styles and the kaleidoscope of fashion, is not less but more difficult to acquire now than it was 150 years ago, when everybody worked in one manner as a matter of course, and every village builder knew the Orders. And it is more difficult than it was fifty or sixty years ago, when hygiene was a negligible quantity, electricity as a commercial power unknown, and the builder was a man who really knew something of the practice of building.

At the same time, I think there has been an unnecessary scare in this matter. We architects have, and have always had, our responsibilities to our clients, and, provided an architect knows his business, watches his work, and takes due care of his clients' interests, I do not think his position is one of greater danger than that of other professional men. The pressure of competition is keener than it used to be, and the standard of attainment is higher, but this is due in the one case to causes beyond our control, in the other to our own efforts; and what we have to do is, on our part, to qualify ourselves for our responsibilities, and to stimulate in the public a more intelligent appreciation of

the services that an architect can and ought to render. If the public understood that an architect is an individual with the necessary limits of an individual, and not merely a wholesale *entrepreneur* on the one hand, or a building policeman on the other, there would be less of the regrettable misunderstandings that sometimes occur in the practice of architecture—but architects should not forget that the only effective passport to the appreciation of the public is the merit of their own personal work, and that if the profession of architecture is to receive a higher recognition in the State than it obtains at present, it can only do so by insuring a high standard of education and attainment among its individual members.

This brings me to the thorny question of

Registration.

In this matter, if you will bear with me, I wish to explain certain developments that have formed part of the history of this Institute. More than twenty years ago I had the honour to be an Associate Member of Council, and about that time a move was made in the direction of Registration, which appeared to some of us, old as well as young, to be heading off architecture into a *cul-de-sac* of unmitigated professionalism. But since those days much water has flowed under the bridge. Free discussion has cleared away the misunderstandings of earlier days, the Institute has taken a very active and—if I may say so, in regard to its members—self-sacrificing part in the reorganisation of education, and there has grown up a fairly general consensus of opinion that Registration, in some shape or another, is desirable, not only in the interests of architects, but in the interests of the public.

So far this Institute is pledged to the policy stated in the report of the committee of 1907, and your Council has for some years endeavoured to give effect to that policy. Your Council can hardly hope to produce a scheme that will at once satisfy all, or nearly all, shades of opinion, and also be within the range of practical politics—this last is important—for I think you will agree with me that, if you run a horse, you should run him for all he is worth, and that it is unworthy of serious men of affairs to waste time and money on mere *ballons d'essai*.

We are after a practical scheme, one that will protect both the public and architects. Various solutions have been proposed. So far none of them have met with general acceptance, but it must not be supposed that the labours of the last few years have been wholly in vain. They have at least shown us some of the difficulties in the way, and have brought it home to thoughtful men that this is a very difficult and intricate problem not to be settled off-hand, and that if a real and satisfactory solution is to be found for it, that solution will have to be built up by careful and exhaustive consideration of the case in all its aspects: of what is required by the public, of what is due to the architect, and of the effect of any such scheme on other professional bodies whose interests may be affected. And if after this careful consideration it is found to be impossible to go quite so far as some of the more ardent of our Registrationists might desire, I would remind them that half a loaf is better than no bread, and I would appeal to them—and, indeed, to all of our critics—to have patience and not to take the bit in their mouths and bolt. It is no use striking before the iron is hot, and it has become clear that there are many issues to this question, all of which must be dealt with before it will be possible to reach the psychological moment of solution.

The conditions of modern society are so complex that it is impossible to deal with any of its problems in

watertight compartments. What may appear to us as very clearly in the public interest may seem less convincing to our neighbours on the other side of the fence, and the experience of history is conclusive that drastic changes are not to be made *uno actu*. If such changes are to take their permanent place in the social organisation, they will only do so as the result of much previous effort, of anxious thought, of the slow attrition of those awkward angles which have split up many a well-meant scheme of reform.

One of the first acts of your new Council has been to appoint a large and carefully selected committee to consider the whole question of Registration, and it has strengthened it by the addition of a number of representative members from the provinces. I would ask you to allow this committee time to deal with the question in all its bearings, and, when the recommendations of the Council come before you, not to look for impossibilities, but to give it your careful consideration as practical men of affairs, and with an anxious regard to the future of architecture. For, after all, whether members of the Council or not, we are but trustees for the next generation, and it should be our business to hand on our inheritance, not tarnished or diminished, but greater and more splendid because it is held on the terms of a higher standard of attainment.

On one point I feel sure we shall all agree. The object of a Registration scheme should not be to make architecture a close profession, regardless of professional skill. We do not want to repeat the history of the Trade Guilds in their later days, when their object was to surround their members with a jealously guarded ring-fence of monopoly. Our object is to put a stop to incompetence, and to establish and maintain a reasonable level of accomplishment, and to see that that level is reached by those who undertake the very responsible work of an architect. There is not a man in this room who would not say "la carrière ouverte aux talents," but what we insist on is that the "talent" should really be there, and that is the substantial issue to which Registration should be directed. It should be really and effectually the hall-mark of professional competence.

So, by this roundabout way, we come back to the vital question of education—or, rather, as I prefer to put it—a sound and thorough professional and artistic training as the basis on which any form of Registration must be founded.

The Newer Scheme of Education.

If we are to obtain public and formal recognition of the fact that architecture is not an art that can be practised by Dick, Tom, and Harry with advantage to the community, and that there is a difference in kind between the work of the trained designer and the architectural efforts of the gentleman who combines the practice of architect, auctioneer, and estate agent, we shall see to it, not only that our present standard is maintained by all who enter our ranks, but also that it is slowly and surely raised, so that there can be no question as to who is and who is not qualified to undertake the work that legitimately falls to an architect.

It is to this object that the Institute, through its Board of Architectural Education, has steadily applied itself during the last few years. Sir Aston Webb was the first and most admirable chairman of that board. I had the honour of succeeding him, and we can both testify to the unswerving sympathy and support which the Institute through its Council gave to that board, and thereby enabled it to carry out the important and far-reaching reorganisation of architectural training which has been quietly going on for the last few years. The syllabus of training for architectural students has been thoroughly overhauled, and quite recently a serious attempt has been made to render our examination a more effective and intelligent test of architectural capacity, and also a real stimulus to the artistic enthusiasm of our students. Design, the adequate

invention of buildings which are good to live in and to look at, is after all the essential object of our training. Many studies are necessary as subsidiary to this, but the aim of our training must always be to make our students competent architects, artists to whom the methods and materials of building are as his canvas and colours to the painter, or his bronze and marble to the sculptor. The initiation of a test in design, which is to some extent competitive, is an important step forward, and a further development of that reorganisation of our methods of training which has been one of the most valuable constructive works carried out by the Institute during the last few years.

The Modern Architect and Scientific Construction.

At the meeting of the British Association in September last, Professor Archibald Barr gave a very able address on the duty of the engineer to the community, and in the course of it called attention to the unfortunate severance of engineering from artistic design. The engineer, he said, takes a too exclusively utilitarian view of his calling, and architects have not sufficiently mastered the science of steel construction to be able to design in it freely. I think there can be little doubt that Professor Barr is right in his contention; and the conclusion to be drawn from it is that in the modern practice of architecture the necessity of the study of scientific construction becomes more and more urgent. That is a point that will not be lost sight of in our scheme of architectural training, and I may assure you that on this point our Examiners are adamant. Yet there are one or two considerations which I venture to offer, to reassure the old-fashioned lover of bricks and mortar. I do not believe that the whole future of architecture rests with steel construction or reinforced concrete any more than I can believe that the whole future of painting lies with the Post-Impressionists or the Cubists. Brickwork and masonry must always hold their place in building, although architects will do well to avail themselves of all the resources of applied science, that is no reason for throwing up their familiar tools and rushing headlong into methods, however brilliant their promises which have not yet stood the test of time.

We artists have to live in an age of science, and science is steadily invading the territory of the artist. Not content with brushing us aside as people of no account, it has stolen our one ewe lamb—it has annexed the term "beauty" for its own purposes, and misled the public by using it in a sense of its own. In consequence of this insidious misuse of the middle term, we artists wake up to find our work judged by irrelevant standards, and condemned accordingly. One hears the term "beauty" applied to subjects as diverse as St. Paul's or Westminster Abbey, to the steelwork of the Gare d'Orléans or to some complicated piece of machinery. Now it is obvious that the same thing cannot be meant in each of these instances. In the case of the buildings, we mean that our sense of rhythm and proportion, our enjoyment of light and shade and the like are gratified; in the two latter cases that we derive intellectual satisfaction from the exact solution of a problem of construction or mechanical function; and it is only because we are lazy or careless of speech that we talk of "beauty" in the case of the steel roof or the steam engine. There is, of course, a borderland, where our pleasure is partly æsthetic and partly intellectual, such as the scale of a great dam, or the lines in perspective of an ironclad. But from the point of view dealt with by Professor Barr I suggest that the term "beauty" as applied to steel construction means technical beauty—that is, that its appeal will be to the intellectual satisfaction given by perfectly efficient work, rather than to the æsthetic enjoyment to be derived from the "ordonnance" of noble architecture. One is, therefore, the less daunted, and I do not think that archi-

ure is going to be stranded high and dry by the engineer; but I heartily endorse Professor Barr's appeal for more thorough study of construction and closer co-operation between the engineer and the architect.

The Schools of Architecture.

I would take this opportunity of expressing our appreciation of the admirable spirit in which several of the Universities have endeavoured to give effect to the Institute scheme in their schools of architecture. The control of the Institute over the training of architectural students has been placed on an efficient basis by the organisation of the system of external examiners. The Institute has been brought into satisfactory relations with the Universities, and is now recognised by them as the official centre of reference for questions concerned with the training of architectural students. We have our representatives in the schools of London University, the Architectural Association, Cambridge, Manchester, Liverpool, Sheffield, Glasgow, and Edinburgh; and finally, at the invitation of the Board of Education at Whitehall, the Institute has undertaken to conduct next year the examinations for architecture of candidates in the National competition of art students. The horizon of the work of this Institute is steadily widening, and the part that it is called on to play in the training of architects becomes each year of greater importance, of vital importance, for the next generation of architects, and scarcely less so to the public and to our own members, because, as I have ventured to assert already, trained technical ability must be the basis of statutory recognition.

New Scholarships.

In this branch of the work of the Institute prospects are very much brighter than they have been hitherto. The Jarvis Bequest has placed at the disposal of the Institute annually a scholarship of £200 a year tenable for two years; and within the present year, through the generosity of the Commissioners of the 1851 Exhibition, the new School at Rome, long dreamt of by the Institute, has been established by Royal Charter; the first instalment of the building is already in hand, and a scholarship of £200 a year tenable at this school for three years is to be awarded annually. The Institute has offered its hospitality to the Commissioners in regard to the examination for this scholarship, which will be the blue ribbon of the year. The jury will be the Faculty of Architecture, all of whom are members of this Institute.

In these scholarships, and in the gold and silver medals of the Royal Academy, not to mention other scholarships and prizes, there are solid inducements to tempt the young man of genius out of his hiding. The importance of the scholarships tenable in the school of Rome will be obvious to all who recall their own days of studentship, those aimless and often fruitless wanderings on the Continent, pleasant enough as a sketcher's pilgrimage in search of the picturesque, but of little value as artistic training, owing to the absence of intellectual discipline and authoritative guidance. . . . The School at Rome may take years of patient effort to perfect, but we may look for great things from it in the next generation. One of the most serious difficulties in the modern practice of architecture is the absence of tradition, the want of a common method and of a recognised standard of attainment. It is not too much to hope that in lapse of time it may be the privilege of the students at our school at Rome to restore this method and standard. I think the time has come when closer attention than it has hitherto received is due to the

Organisation of Training

the arts in this country. Excellent work is done in our schools, but the schools are not sufficiently organised *inter se*, and there is need for further development both in regard to this and also in regard

to the advanced stages of training in the arts. Our schools bring the students up to a certain point, and far ahead for the brilliant few there will be the artistic paradise of the School of Rome, but there is an interval between these stages to be bridged over, so that others, not among the brilliant few, yet good men too, may have the benefit of the most advanced training in design, with all the resources of a great establishment and the benefit of the skill and experience of the most competent artists. I believe that the want can be met by the development of existing institutions, but it is one that will require very serious and anxious consideration, in co-operation with such educational establishments as the Royal Academy and others.

Lastly, there is

The Relation of the Architect to Himself.

So far I have been discussing his position in regard to the public. But more important than this is his own attitude to his career, the point of view from which he regards the work of his life.

There is a real danger, in all this whirl of architectural politics, of our forgetting that first of all we are artists, and that the art which we practise is a very great and a very old one. The cares of business, the keenness of competition, the feverish haste of modern work, are apt to reduce the lamp of art to the merest flicker, if they do not put it out altogether. Those of us who have wide experience of practice know how difficult it is to keep that lamp alight, but here I am addressing myself not to my seniors and contemporaries, but to our younger members: to those who will take our places and carry on our work. Scholarship and research have always been among the best traditions of this Institute. I need only recall such names as Donaldson, Cockerell, and Penrose, and remind you that whatever view one may take of the historical justness of the Gothic Revival, there can be no question of the intense enthusiasm that inspired the labours of such men as the younger Pugin, Street, Burges, and Nesfield. If you turn over the pages of the earlier volumes of our Transactions you will find papers on matters of serious interest, marked by a learning and ability that give them a permanent value in architectural literature. I hope, and I do not doubt, that that tradition will be worthily maintained by the rising generation. Current politics may be fascinating, but they are the outside of the cup and platter; they are a very poor substitute for that patient forging and perfecting of your artistic armament which will enable you later to practise your art with the enjoyment that comes of real mastery. And to those that have enthusiasm this labour will be a perennial delight, the joy that is to be won from the study of past art.

Who of us, after all, does not look back with vivid pleasure to those wrestlings with the mysteries of some great cathedral, quiet hours with pencil, notebook, and two-foot rule spent in some exquisite chapter-house, long autumn rambles among the time-worn buildings of historic cities?

These things are the privilege of the architectural student, and it is this touch with the past that gives to our work its abiding interest. You may recollect the old Greek game of the Lampadephoros, where runners took torches lit at the altars of Prometheus, Athene, and Hephaistos, and passed them from hand to hand till they reached the winning post. That, gentlemen, is our position. It is our business to hand on the torch of architecture. Some of us may be getting old and stiff in the joints and may have to content ourselves with painfully nursing the flame. It is for you of the younger generation so to train yourselves in your calling that, when the torch is passed into your hands, you may fan it to more vigorous life, and enable it to shine again with all the splendid brilliancy of the great ages of architecture.

ARCHITECTURAL DRAWING AND DRAUGHTSMEN.

PROFESSOR REGINALD BLOMFIELD has laid the whole architectural profession under another debt of gratitude by this his latest book, on architectural drawing and draughtsmanship.* Books great and small come from his pen with marvellous rapidity, when we remember the range and character of his public and private work. Better, however, than their number and size, better than the research which always distinguishes them, is that sense of broad culture and wide outlook on all the arts, including the art of life itself, which they exhibit. In these days, when for most of us architecture is so necessarily bound up with curious commercial questions, it is a great thing to have one of our leading men who can speak with a voice that commands attention, not only from his fellow architects, but from the educated public at large. It is still better when this voice is raised to emphasise and expound the vital but often, thanks to ourselves, largely obscure connection between architecture and the main stream of the arts. This point of view, which characterises all Professor Blomfield's writings and gives them a permanent value above any historical treatise, however accurate, is pre-eminently displayed in the present work.

It is perhaps because our modern architectural drawings are on the one hand either so diagrammatic and technical or, on the other, so removed from any traditions or style of draughtsmanship, that they have

ceased to be of interest in themselves to laymen. One, until Mr. Walcot suddenly appeared and converted the architectural room at the Royal Academy into a one-man show of brilliant water-colours, used to look into that place of assignation for any intrinsic interest in the drawings themselves. No one, as far as is known, collects or deals in the drawings of modern architects. Paradoxically, therefore, Professor Blomfield has selected in the history of architectural drawing a subject of great interest and value. For, as in architecture itself, it is only by a knowledge of the traditional methods that any just criteria can be formed by means of which we can hope to escape from the maze of fashion, and so reach the things of permanent value.

Professor Blomfield begins his volume with an excellent chapter on the purpose of architectural drawing. He makes the obvious and necessary distinction at the outset between drawings which furnish instructions to builders and others which are designed to convey ideas from the imagination of the architect to the brain of the beholder. It is, of course, of the latter that the book treats.

The art of making such drawings is a modern one, commencing with the Renaissance. Such mediæval drawings as exist, like those of Villard de Honcourt, may be very spirited performances, but are in no sense architectural drawings. A diagrammatic plan of a cathedral apse with a weeping figure of a monk in the foreground cannot be described as an architectural

* "Architectural Drawing and Draughtsmen." By Reginald Blomfield, A.R.A. London: Cassell and Co., Ltd., price 10s. 6d. net, 10½ x 7½ ins. 96 pages, 103 illustrations.



DRAWING OF A COURT. BY MAURO TESI.

(In the Collection of the Royal Institute of British Architects).

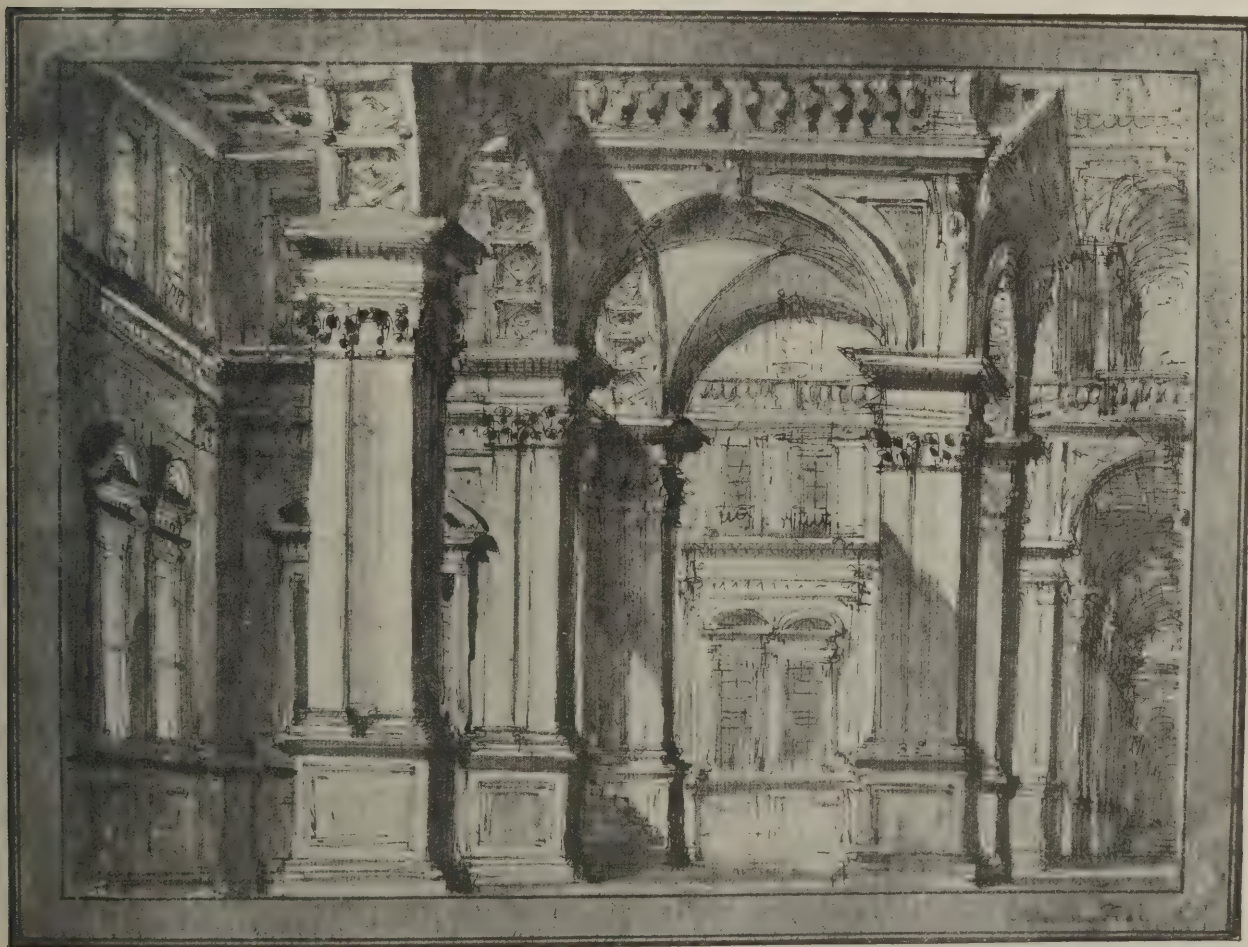
rawing. The astonishing thing is, as Professor Blomfield points out, that architectural draughtsmanship should have sprung into being in Italy in the fifteenth century, within certain limits, completely equipped. The freedom of Renaissance thought required freer methods of expression, and architectural drawing changed at once from mere diagrams of plans and vaulting to serious studies of buildings in the round. No doubt the desire to discover the methods of antiquity and to record such discoveries did a great deal to foster draughtsmanship. All the Italian and French architects of the sixteenth century of any worth drew and measured the Roman remains, and the facility for expressing architectural form so gained showed itself in the treatises of Serlio, Vignola, and Palladio, as well as in the freer draughtsmanship of Bramante and Peruzzi. Among the very numerous illustrations in the volume are reproduced some delightful sketches by the latter for early projects of St. Peter's.

From the Italians of the sixteenth century the author passes on to the Frenchmen of the seventeenth century, and shows how a new class of architectural illustrators, as apart from architects, grew up. If these men, who were ready to design anything on paper, helped the spread of rococo ornament in France, they gave to architectural detail a new life and vigour. Chief among them was Jean Le Pautre, several of whose drawings are reproduced. Two magnificent designs for vases with back grounds of palaces and clouds remind us strongly of Mr. Rickards's virile draughtsmanship. In contrast to these designers was the great French school of illustrators of actual buildings. These were sometimes architects, sometimes

purely draughtsmen. Professor Blomfield gives many fine plates by the Marots, father and son, and by the Perelles, also father and son. From the bird's-eye views of the Perelles one can gather not only the outward appearance of the châteaux and jardins, but the very spirit of the life lived in them, so characteristic do they seem of their time.

From France we return to Italy and the great school of imaginative draughtsmen, which culminated in the stupendous work of Piranesi. If the French architectural draughtsmen of the seventeenth century illustrated to the full the physical life of the time, rich in all the trappings of royalty, the Italians, especially of the latter half of the eighteenth century, show the spiritual strivings of an age when the romantic movement was first beginning. There is a surprising sense of the drama of life in many of these merely architectural compositions, which makes them works of art as surely as any colossal canvas by a Veronese or a Titian. The drawings of Mauro Tesi, which we illustrate, have this spiritual quality, while those of Bibiena, designed as stage scenery, either reach a sublimity unknown before in architectural drawings or collapse into the grotesque. This chapter of the book ends with an account of Piranesi and his work, which, in spite of recent volumes on the subject, is the most illuminating criticism and appreciation that has yet appeared. The isolation of his genius is very clearly explained, as well as that quality of *terribilità* which he shares with Michel Angelo alone. Piranesi, like Michel Angelo, though he had many imitators, had no equal.

The last chapter is devoted to the more placid work of our English draughtsmen, and it is in our great school of early water-colourists that Professor Blom-



DRAWING OF AN INTERIOR. BY MAURO TESI.

(In the Collection of the Royal Institute of British Architects.)

field finds English architectural draughtsmanship at its climax. Certainly there is a charm and delicacy about the work of Girtin, Daniel, and Cotman not to be found in that of any other draughtsmen, but till now one had hardly thought of them as illustrators of architecture. But if we accept their sketches of architecture and wide landscape treatment as coming within the definition of architectural drawing we may well feel proud of our English tributary to the general stream. Granting this, Nesfield's sketches of church spires and Waterhouses's competition perspectives, which appear next, are rather in the nature of an anti-climax.

In so comprehensive a survey it seems a pity that there should be no mention of the work of any living artists. We seem more cut off from the great tradition which the author has so carefully traced through the centuries than we really are. We have at least one draughtsman among us who carries on and forward the work of the great Italians—Mr. Muirhead Bone. Let us hope Professor Blomfield's admirable book will lead to others.

C. H. R.

DUBLIN UNIVERSITY COLLEGE COMPETITION.

ON pages 482, 491, 492, 493, and 495 we illustrate the designs placed first, second, and third in this competition, some remarks on the general features of which are given on page 484.

The first-premiated design possesses the merit of being the most compact scheme submitted, and on this score has probably been adjudged the winner. In its main lines the plan is straightforward and practical. The nucleus is the examination hall and around this the various departments have been grouped in a symmetrical fashion. The strictest economy in planning has been exercised throughout and nothing has been provided beyond the stipulated accommodation, which, in our opinion, was incomplete. In every scheme of such proportions there are bound to occur a certain number of errors. We noticed that the seating in the main lecture theatres was not arranged with regard to effective lighting—that is to say, left-hand light was not provided; that the anatomy theatre, by reason of its shape, would not admit of every student obtaining a sufficiently good view of the demonstrations, and that, because of its situation on the ground floor, no top light could possibly be provided for the operating table. One further point with regard to the plan. From our experience of university professors we venture to think that they would find it more convenient if their private rooms were more easily accessible from their individual lecture rooms. In this case the authors have relegated them all to the top floor.

The elevations of this scheme show an imperfect recognition of the laws of Classic composition. To give only two examples:

(1.) In the treatment of the Earlsfort Terrace front the end masses were recessed instead of being brought forward beyond the line of the main building.

(2.) In the handling of the centre mass of the same façade the colonnaded portion is too narrow in comparison with the total width of the whole feature. The detail, where it occurs, shows traces of Georgian influence in the Doric columns, which are elongated to ten diameters, and of Neo-Grec in the treatment on familiar lines of the entrance doors: the juxtaposition of the two types of detail here and elsewhere strikes us as slightly incongruous.

The second-premiated design reveals not only an intimate acquaintance with the requirements of the various departments, but also no small knowledge of the routine of the numerous schools. In point of fact, the second scheme provides some accommodation not stipulated, but, in our opinion, none the less necessary.

We notice, among other things, that provision had been made for library administration. Perhaps for this very reason the estimated cost of this scheme exceeded the stipulated figure to a somewhat unreasonable extent. In general lines the plan is compact and shows a clear realisation of the value of axes. With regard to the shapes and lighting of the theatres and laboratories the authors have shown a grasp of the individual function of each room and its relation to the whole building. We must except the case of the botanical and zoology portion, which is somewhat inconveniently spread over three floors. Turning to the elevations, it is a difficult matter to render interesting a façade exceeding five hundred feet in length, and doubtless the majority of the competitors were handicapped by the necessity imposed upon them of working in the unaccustomed scale of 1-16 in. to the foot. The authors of this design, however, have grappled with the problem and have shown that they realise the architectural value of bold projecting masses of building to relieve the monotony of so extended a façade. In all architectural details this design showed no little scholarship, and it is much to be regretted that it could not have been carried out for the available sum.

In Mr. Cullen's design the chief points to note are the arrangement of the lecture theatres in the lower blocks, and the rather excessive length of corridors. The disposition of the various departments, and the shapes, positions, and lighting of the numerous laboratories show a lack of provision for scientific requirements. The elevations and $\frac{1}{2}$ in. detail were carefully drawn and shaded, but lacked Classic feeling.

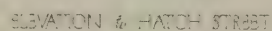
The remaining sets of drawings merit no particular mention, with the exception of the $\frac{1}{2}$ in. detail sent in by Messrs. O'Callaghan and Webb, which we noticed was carefully considered and well drawn.

MODERN SMALL HOUSES.

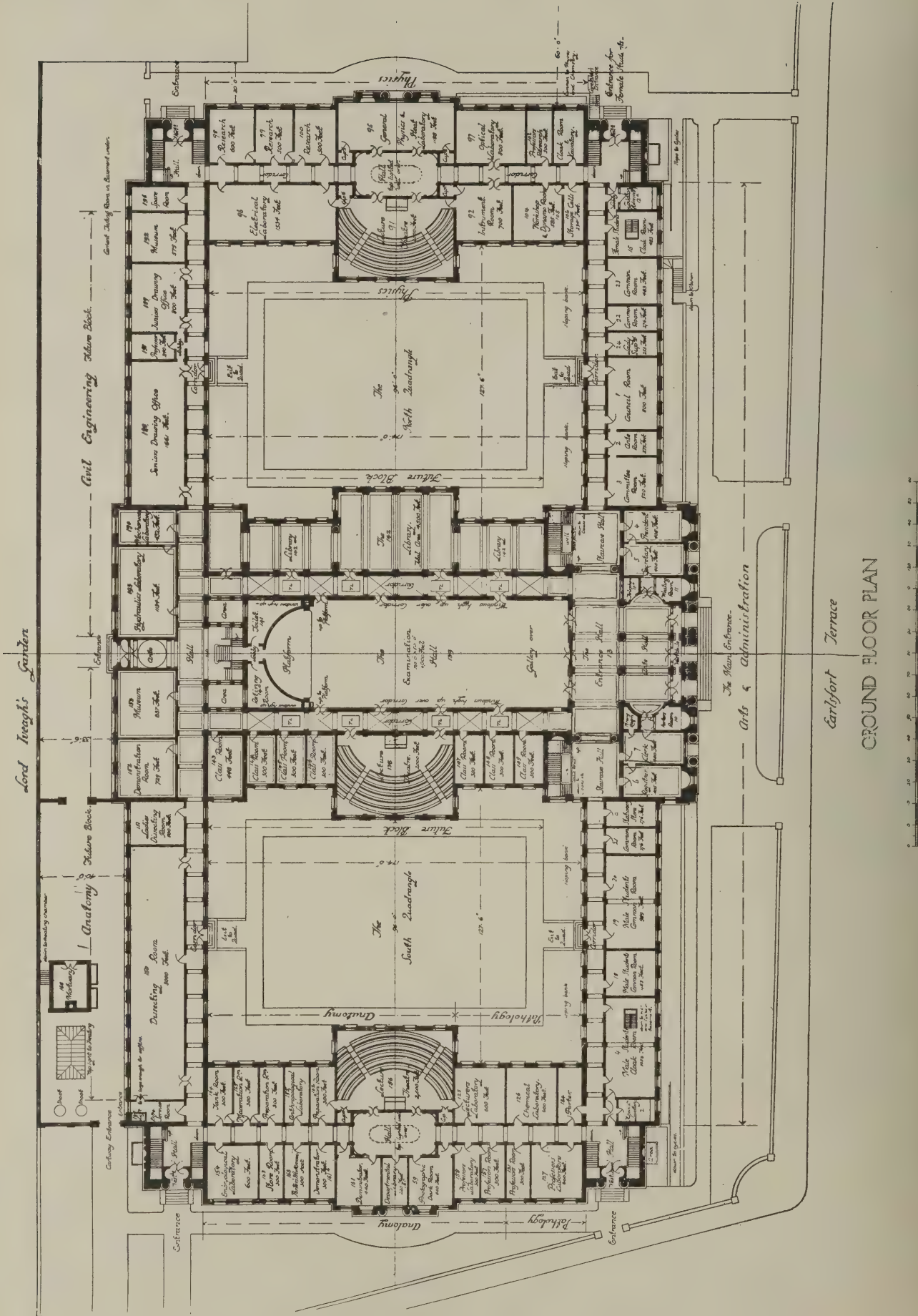
THE cottages shown on page 497 have recently been completed on the estate of Mr. W. W. Grantham, at Balneath Manor, near Lewes. Originally there were six cottages on the site, of an interesting design, which have been altered and enlarged. Four new cottages have been added to the north, the centre two being turned round at right angles to the front, in order to allow of good passage-way to an old seventeenth-century cottage at the back and also to obtain the best aspect for the living rooms and principal bedrooms. The walls are of thin brick built hollow, and cement rough-cast on the outside. The roofs are tiled with old tiles obtained from old buildings on the site, mixed with new hand-made sand-faced tiles of a darkish colour, which tone well with the old. Mr. W. Wells, of Plumpton, was the builder.

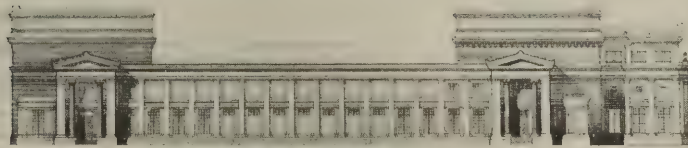
WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS.

AS the third example in this series we publish on page 498 of the present issue a detail drawing of the entrance front to Edgworth Manor, Cirencester—in the Cotswolds—by Sir Ernest George, A.R.A., and Mr. A. B. Yeates, F.R.I.B.A. The drawing shows a bay, including the entrance door. The work, done some years ago, was carried out in limestone quarried within a short distance of the house, and the stone slates used on the roofs were quarried in an adjoining hill. The builders were Messrs. Hayward and Worcester, of Bath, who also executed the fine oak panelling, staircase, etc., within the house.

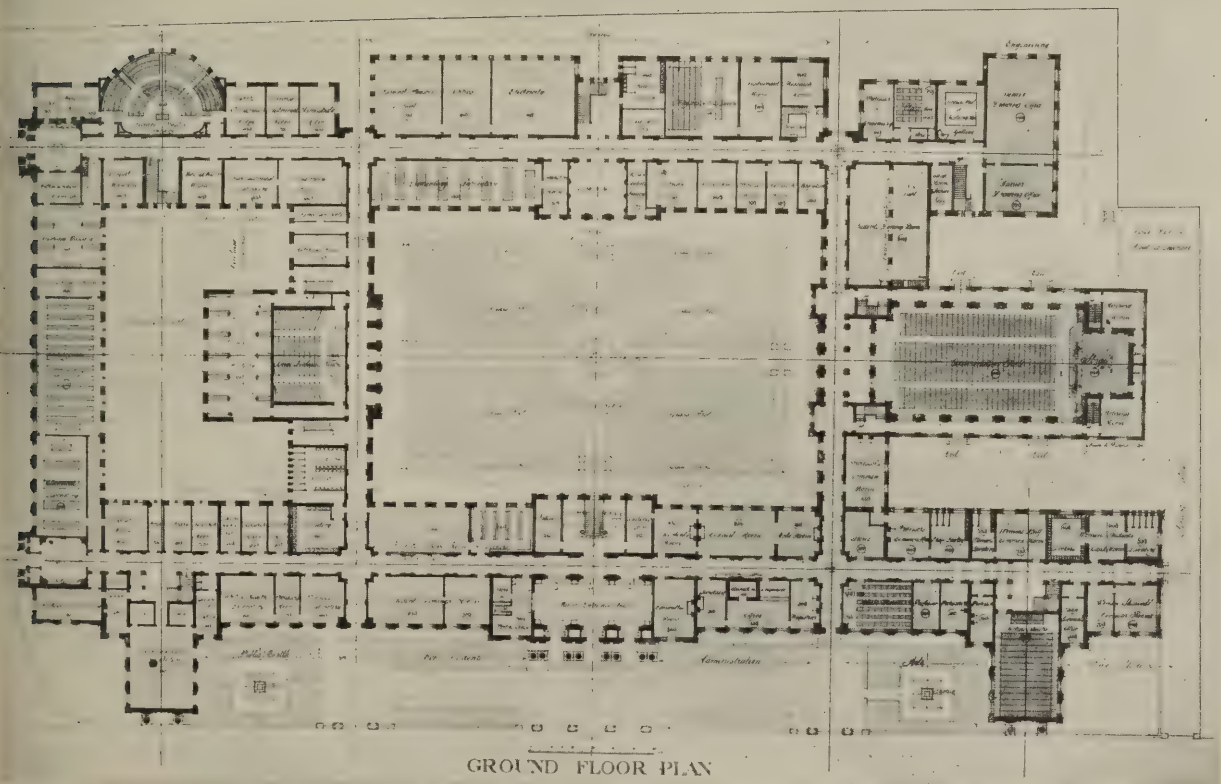


DOOLIN AND BUTLER, ARCHITECTS.





ELEVATION TO HATCH STREET



DUBLIN UNIVERSITY COLLEGE COMPETITION: DESIGN PLACED SECOND.

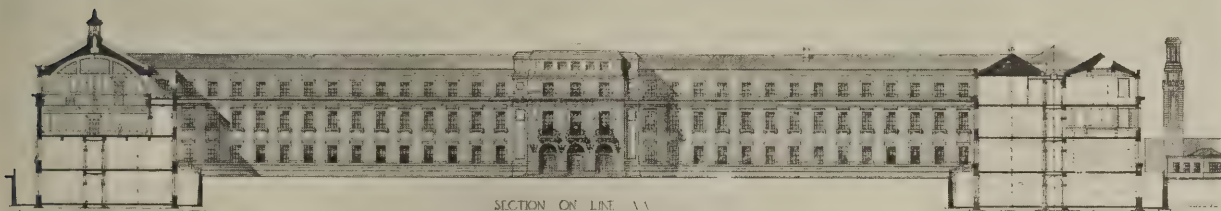
ARTHUR AND H. H. HILL, ARCHITECTS.



ELEVATION TO EARIKORT TERRACE.

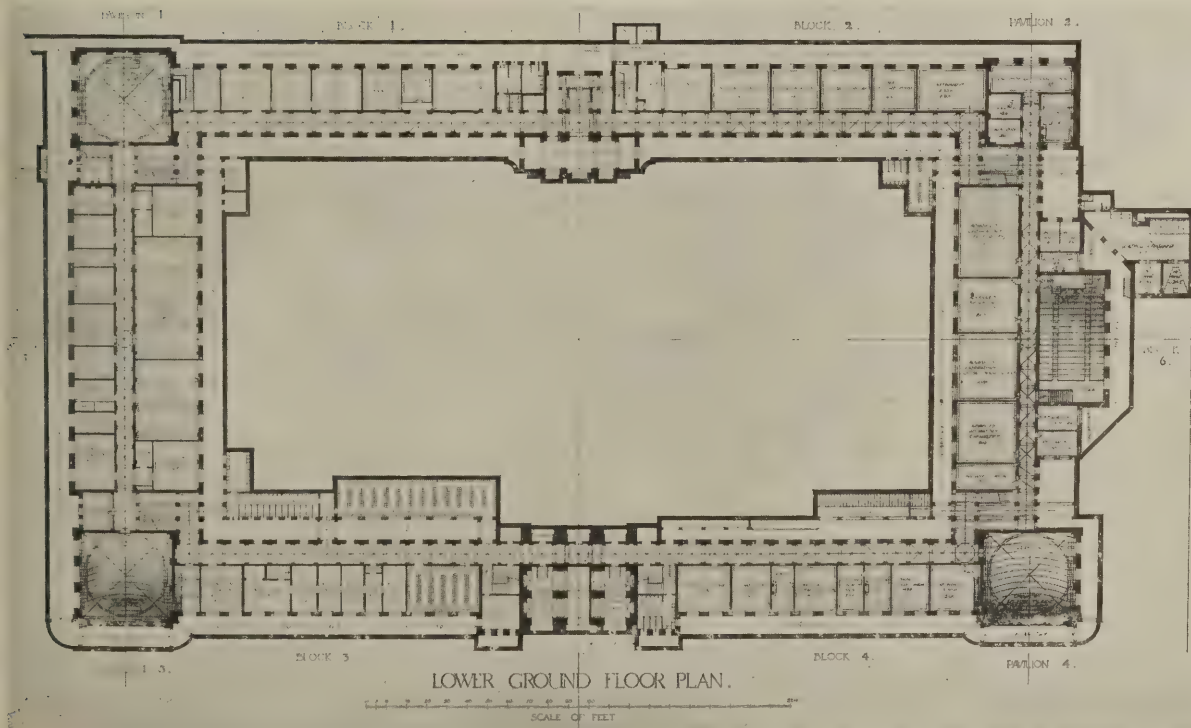


ELEVATION TO HATCH STREET.



SECTION ON LINE A A

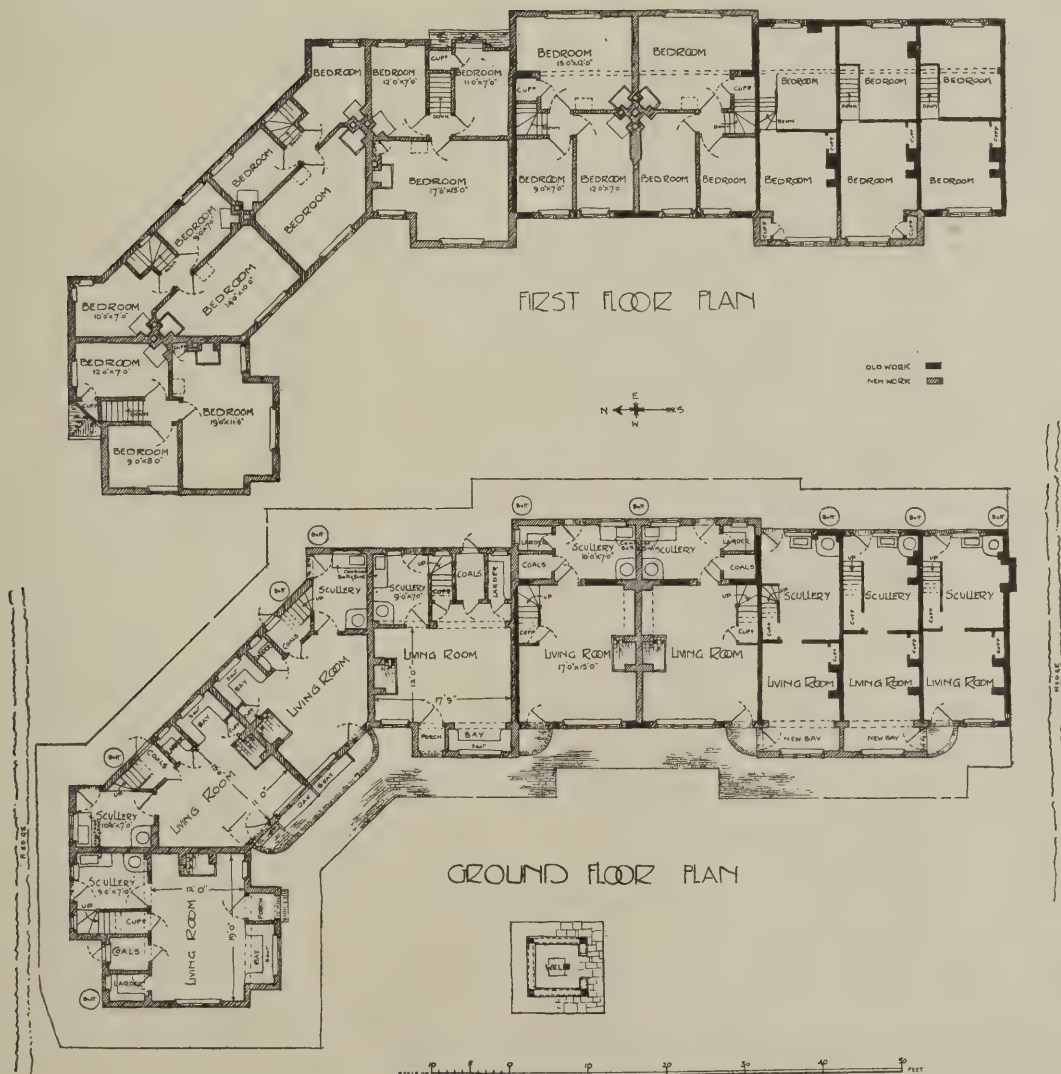
SCALE OF FEET.



LOWER GROUND FLOOR PLAN.

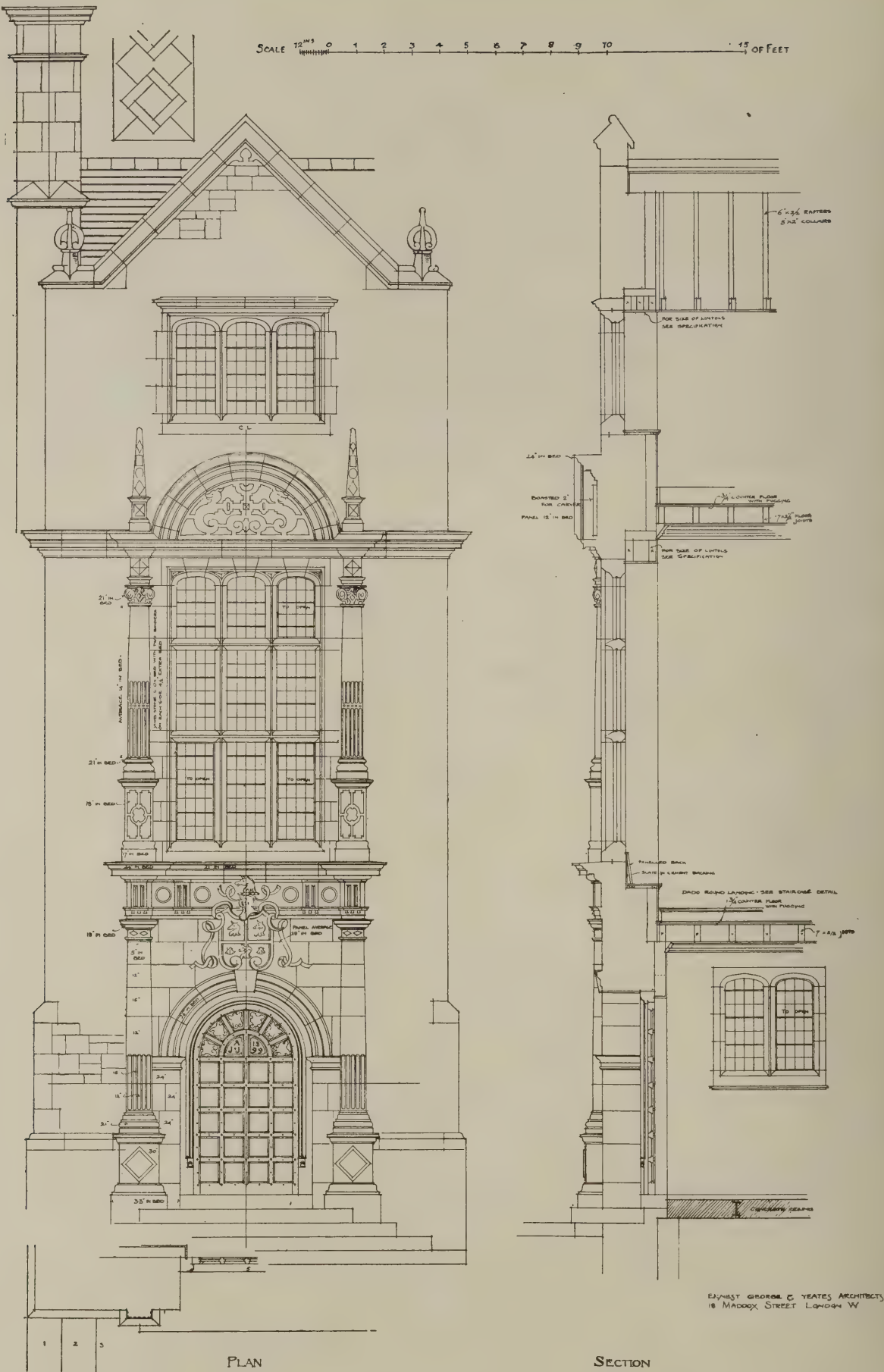
SCALE OF FEET

LIBRARY
OF THE
UNIVERSITY OF CHICAGO



MODERN SMALL HOUSES—II. COTTAGES AT BALNEATH MANOR, NEAR LEWES, SUSSEX.

HEDLEY AND DOUGLAS POLLOCK, Lic.A.R.I.B.A., ARCHITECTS.



ARCHITECTURAL STUDENTS' SECTION.

Under this heading a special contributor, eminent both as an architect and as an educationist, will furnish information on matters relating to architectural design and education. Advice will be willingly accorded to those who seek help in their studies; but questions relating to construction, or to matters which can be easily settled by reference to the ordinary text-books, cannot be considered.

Evening Study; and the Preparation of Drawings.

E. D. (Gorton) writes: "Kindly state that course you would recommend to a student, having evenings at disposal, who wishes to study Greek work on the lines laid down by the Liverpool School. Are the drawings done by the students of this school usually left in pencil and shaded? Are the shadows got by projection in all cases, or are they shaded according to knowledge gained by practice?"

—If E. D. wishes to study Greek work on the lines laid down by the Liverpool School of Architecture he had better attend the Liverpool School. He says he has his evenings free, and he appears to live at Stockport. If he will look up the train service between Stockport and Liverpool he will find this is a perfectly feasible proposition. No doubt the journey there and back in the same evening would be a little tiring, and he would do better work if he could arrange with his office to spend a day a week, or even half a day, at the school. The Liverpool School makes arrangements for students from a distance to spend any specified number of whole or half days in the school studio. Students who can spend one day a week during the Autumn and Lent terms can sit for the University Certificate in Architectural Design, and at the same time can prepare their four testimony of study designs for the Final R.I.B.A.

As to the question whether the Liverpool drawings are left in pencil and then coloured we are in a position to say that all the best are inked in with watered Indian ink. This makes a much cleaner line than pencil, and like pencil does not spoil the colour as does a line in full black ink.

With regard to the shadows these are in every case outlined in pencil before any colour is applied. They are projected from plan and section, but the student soon becomes familiar with the general types of shadow, and after he has projected the main points can fill in the detail from the knowledge he has acquired. At Liverpool students in their first year work out to a large scale the shades and shadows of one of the orders, and then apply the knowledge so gained to shading a full sheet of the orders. This is found to be sufficient groundwork in the theory of shadows to enable them henceforth to shade all their drawings, whether in design or measured work.

There is no doubt that E. D. is right in his desire to learn how to shade his drawings, especially as his desire for this is linked with a desire to study classical architecture. Classical architecture with its subtle modifications of form can never be properly shown or understood by outline drawings. Assessors of competitions are beginning to realise this, and for their own assistance in appreciating the relative merit of designs are insisting that the elevations should be shaded. After all it is the mass of the building and how that mass is proportioned and modulated which really matters. An outline drawing merely gives you a pattern on the paper more or less pretty; it does not give the relative mass of any part or parts, much less

a true value to the detail. The outline drawing, particularly that done with a very thick line, is a relic of the Gothic Revival, and the sooner it is entirely abolished for showing classical work, the better. In France and America it only exists for the diagrammatic purposes of working drawings, where it is very properly used, but even then the thickness of the line is proportioned to the scale of the drawing, and in no case is so thick as to endanger accuracy. With lines that measure six inches thick to an eight scale the accuracy of English competition drawings is not a thing to swear by.

London Schools of Architecture.

Mr. Leslie Wilkinson writes to us to point out that in addition to the Architectural Association School the School of Architecture at University College, Gower Street, offers facilities in London for advanced students in design. I am glad to acknowledge this, for in anything that has been said in previous issues, it has been very far from my intention to convey the impression that the Architectural Association School is the only school of architecture in London where such work can be done. There is, of course, not only the University College School, but the Royal Academy School, and these two have this characteristic in common, that distinguished architects are called in turn to set the subject for design and to criticise the results. At the Academy School these are the architect R.A.'s and A.R.A.'s. At University College there have been well-known men like Mr. Burnet and Mr. Leonard Stokes. Whether, however, this practice is entirely helpful to the student is another matter. One has only to think for a moment of the work of the several architect Royal Academicians to see at once how differently each would treat any given problem. The student of all people requires continuous guidance, otherwise he would not be at a school, and for him at least in the multiplicity of counsel lies confusion. But in spite of this handicap, as I conceive it to be, I should like to acknowledge the excellence of the work done by the University College School. I had the pleasure of seeing their exhibition at the end of last session, and I was particularly struck with the thoroughness of the work, both in building construction and the history of architecture. This indeed might be expected with such teachers as Professor Simpson and Mr. Leslie Wilkinson. A number of excellent essays on constructive and historical subjects, showing individual care and thought on the part of the students, were exhibited. There were, too, some fine shaded drawings of compositions of classical detail in the manner of those published by the Liverpool School, which were particularly attractive. University College, with its Slade School of Drawing and Modelling, and its fine engineering laboratories, offers the architectural student exceptional facilities for broadening his outlook. The School of Architecture is shortly to be rehoused with the Slade School in an extensive new building designed for it by Professor Simpson. It will therefore be in the ideal position of

having its own building designed by its master, and in this respect will be the first school in England. Liverpool might have had this distinction when Sir William Lever gave it, a few years ago, £25,000, with which either to buy the beautiful old building it at present inhabits or to build a new one, but it decided on the former—perhaps rather quixotically.

The Question of Premiums.

R. M. S. (Sunderland) writes: "Can you tell me whether, if I send my son for two or three years to a school of architecture, I shall still have to pay a premium for him afterwards to get into an office?"

—This is a very pertinent question which many parents must be asking themselves. Unfortunately no general answer can be given to it, for so much depends both on the student himself and on the office he selects. When the Liverpool School was founded, nearly twenty years ago, the chief architects in the town pledged themselves to accept a lesser premium from students who had passed through the school than from others, and this promise has been very generally kept. Some Liverpool architects have, indeed, gone further and have taken in men as improvers, neither paying them anything nor receiving anything from them. The difficulty in Liverpool has been that the students who in their native town are asked to pay a premium have been received as paid assistants in London offices, and the same thing has happened in Manchester and Dublin.

The general position is that in the best London offices the premium pupil is becoming a *rara avis*, and that the best offices in the large provincial centres are gradually following suit. In country districts the premium pupil is bound to exist for a long time yet; and if any traditional architecture still exists in out-of-the-way districts there are many sentimental reasons why pupils should exist too. The well-trained student, however, who is a capable draughtsman and knows both the elements of construction and design, should be worth his place in any office, and has not generally any difficulty in finding one. The best can do more than this and can obtain posts as junior assistants at from £1 to £2 a week. A man with a portfolio of finely rendered drawings under his arm and who offers his services at this rate is often a welcome visitor in an office where large work is going on or where a good deal of competition work is done. Good expressive draughtsmanship alone will always command its price, and the school-trained student should at least have this. He may have a great deal more, but the acceptability of it depends on whether the architect he is applying to needs it or not. The best architect does not always require the best assistant.

International Building Exhibition, Leipzig, 1913.

We are informed that the closing date (originally October 1st, 1912) for applications by intending exhibitors at the International Building Exhibition, Leipzig, 1913, has been extended to January 1st, 1913. Thus, firms who intended to participate, but who hitherto have omitted to send in their application, still have an opportunity of securing the space they require. The extent to which the general building industry is interested in this exhibition may be judged from the fact that space has already been booked to the amount of a million marks, or say about fifty thousand pounds of sterling English currency.

COMPETITIONS.

Hale Town Planning Competition.

The Town Planning Committee of the Hale (Cheshire) Urban District Council, with their adviser, Mr. Percy D. Lodge, F.M.S.A., of Manchester, at a meeting held last week, made the awards for the above competition. The first premium of £50 was awarded to Mr. R. Dann, of Messrs. J. Cheal and Sons, Ltd., Low-field Nurseries, Crawley, Sussex, and the second premium of £25 to Messrs. Robert Bennett, A.R.I.B.A., and Wilson Bidwell, architects, Letchworth (Garden City), Herts. The design coming next in order of merit was that of Mr. John C. Thompson, of the Earle Estate Office, Manchester, and 12, Dunham Road, Altrincham. The committee present, which consisted of a majority of the council, were unanimous in their decision. The plans of the two successful competitors will be used as the basis for the town planning scheme which the council intend to make application to the Local Government Board for permission to prepare. The first step is the settling of the area to be included in the scheme. This question will come up at the next meeting of the committee, which is to be held at an early date.

Mr. Morley Horder and Cheshunt College.

"Mr. P. Morley Horder, F.R.I.B.A., whose plans for the new building for Cheshunt College have been accepted, is," a writer in the "Christian World" records, "a son of the Rev. W. Garrett Horder, of Ealing, the editor of 'Worship Song.' Mr. Morley Horder was the last architect to be admitted to the selected eight who were invited to compete in the preparation of designs for the college. His drawings were selected by Sir Aston Webb, R.A., as the most suitable, and the College Governors came unanimously to the same conclusion without knowing the name of the successful competitor. Mr. Morley Horder's father was himself trained for the Congregational ministry at Cheshunt College in the days of Dr. Reynolds." Mr. Horder, it is further stated, has just completed designs for new houses for Mr. Lloyd George, M.P., Mr. Harold Begbie, and Mr. L. G. Chiozza Money, M.P.

LIST OF COMPETITIONS OPEN.

NOVEMBER 25. SCHOOLS, NEWCASTLE-ON-TYNE.—Particulars of this competition, which is limited to local architects, are obtainable from the Education Office, Northumberland Road, Newcastle-on-Tyne.

NOVEMBER 29. BRANCH LIBRARY, LANGSIDE, GLASGOW.—Premiums £50, £30, and £25. Assessor, Mr. A. N. Paterson, A.R.S.A. Particulars from Town Clerk, City Chambers, Glasgow.

NOVEMBER 30. SWIMMING BATH, BALHAM.—This is the extended date for the reception of designs in this competition, which are to be sent to the Town Clerk, Council House, Wandsworth. Conditions (£1 is.), Mr. P. Dodd, Surveyor to the Borough Council, M.Inst.C.E., 215, Balham High Road, S.W.

DECEMBER 1. ROYAL PALACE AND LAW COURTS, BULGARIA.—Architects desiring to take part in this competition should communicate with the Commercial Intelligence Branch of the Board of Trade, Basinghall Street, E.C.

DECEMBER 2. SCHOOL BUILDINGS,

CARLISLE.—Particulars, City Surveyor, Carlisle.

JANUARY 1, 1913. EXTENSION OF MUNICIPAL OFFICES, DUBLIN.—The competition for the enlargement of Dublin Municipal Offices, in Castle Street, is restricted to practitioners in Ireland. The cost is estimated at £55,000, and the author of the selected design will supervise the work. Second premium, £150; third, £100. Latest day for conditions, December 2. Apply Municipal Offices, Dublin. Deposit £2 2s. Mr. Albert H. Murray, A.R.H.A., has been appointed assessor.

FEBRUARY 3, 1913. COUNCIL SCHOOL, HARROGATE.—The Borough of Harrogate Education Committee invite designs for an elementary school for 675 children. Particulars, C. E. Rivers, A.M.I.C.E., Borough Engineer, Municipal Offices, Harrogate.

MARCH 1, 1913. MUNICIPAL BUILDINGS, RANGOON.—The committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars £1 (returnable) may be obtained from the London Agents, Messrs. Ogilvy, Gillanders, and Co., Sun Court, 67, Cornhill, E.C.

MARCH 1, 1913. CITY HALL, WINNIPEG.—Particulars from Mr. A. Waugh, City Hall, Winnipeg.

IN PARLIAMENT.

(By Our Press Gallery Representative.)

Improvements at Westminster.

Mr. King asked Mr. Wedgwood Benn, as representing the First Commissioner of Works, whether it was intended, in connection with the estimates for the next financial year, to undertake any alterations or improvements to the buildings of the House of Commons; if so, whether he could indicate the nature, extent, and cost of any works proposed; and whether he was prepared to accept suggestions from or consult the wishes of members.

Mr. Wedgwood Benn said that various proposals were under consideration, but the opinion of members would be sought before any considerable changes were decided on. The First Commissioner would welcome suggestions from members at this time while the estimates were in preparation.

Sir J. Lonsdale asked whether there was any intention of increasing the size of the Chamber.

Mr. Wedgwood Benn said he had never heard any such suggestion.

Ventilation of the House.

Mr. Wedgwood Benn, replying to Captain Murray, said that if there was evidence of a general desire for the appointment of a committee to inquire into the ventilation of the House of Commons the First Commissioner of Works would be glad to carry out the suggestion.

Town Planning in Scotland.

Mr. McKinnon Wood, Secretary for Scotland, informed Mr. Hogge that no town planning schemes had yet been prepared and submitted for the approval of the Local Government Board for Scotland, but the Board had authorised the preparation of five schemes, one in Dunfermline, including Rosyth, one in Inverkeithing, and three in Dundee. An application had been received from the Corporation of Edinburgh for the Board's authority to prepare

a scheme for the Bellevue district. The Board had held a local inquiry on this, and were awaiting the report of their Commissioner.

New Government Buildings in Edinburgh.

Mr. Pirie asked the Secretary for Scotland whether he could state what Government offices it was proposed to erect on the site of the Calton Prison, Edinburgh, whether provision was being made for Scottish Insurance Commissioners, where it was proposed to transfer the prison.

Mr. Wedgwood Benn, who replied, said the question as to what Government Departments would be accommodated on the Calton Prison site was still under consideration. No statement could be made at present in regard to the prison.

Mr. Watt asked whether there would be suitable accommodation for the Scottish Parliament.

Mr. Wedgwood Benn replied that it was premature to make any statement on the subject.

NEW BUILDINGS AT CAMBRIDGE UNIVERSITY.

To meet the increasing number of matriculants at Cambridge University, building is going on in all directions. In Queens' Lane, on the site of Andrew Dockett's old almshouses, Queens' College has erected buildings which provide accommodation for twenty-six undergraduates, as well as officers and rooms for the Bursar and his clerks. The external design, in the estimation of "The Times" University correspondent, is handsome and well proportioned; and within, a dado of oak panelling runs up the staircase, and the floors are laid with oak boards. This building has been carried out by Messrs. Rattee and Kett from the plans of Mr. C. G. Hare. Emmanuel College is also erecting extensive buildings, which will form two sides of a northern court on the area between the University offices and between Emmanuel Street and Christ's Lane. This court is connected with the older part of the college by a subway, but will not be ready for occupation for some months.

Extensive buildings are also being erected in connection with the "Museums." The first block of the Museum of Archaeology and Ethnology was completed a few months ago.

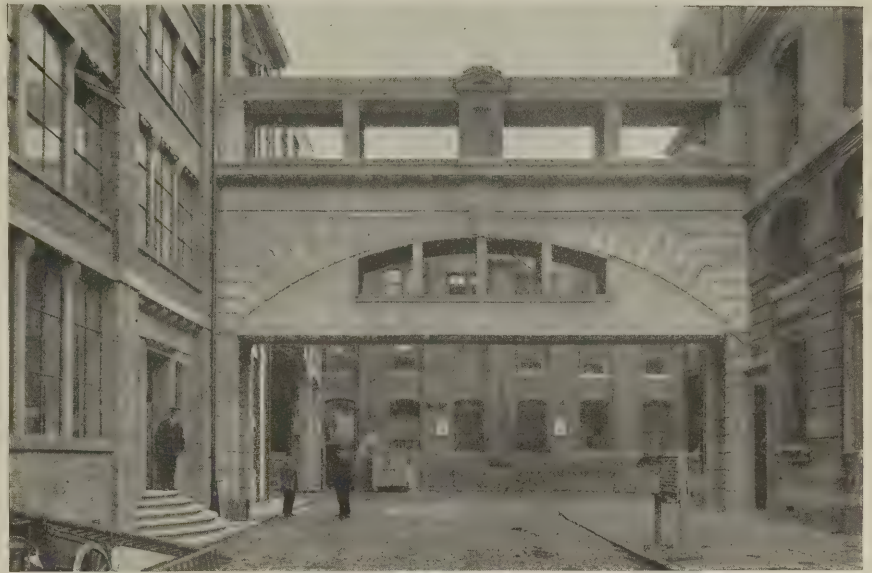
The engineering department has completed an important addition to its premises on the site of the House in Free School Lane. The building covers an area of about 2,000 square feet; it fills the whole space between the Cavendish Laboratory and the earlier buildings of the Engineering Laboratory, thus completing the western frontage of the University "Museums." The extension consists of three floors and a basement. The elevation to Free School Lane is of red brick with stone facings. The capital sum of £5,500 to provide for the cost of the building of the new solar physics observatory has been paid over by the Treasury, and work on the buildings is already in progress; and £14,000 is to be expended on buildings where researches on plant breeding and animal nutrition can be carried on. This building will nearly equal in size the present School of Agriculture, and its foundations are already appearing above the ground. The new laboratory for physiology is progressing rapidly.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

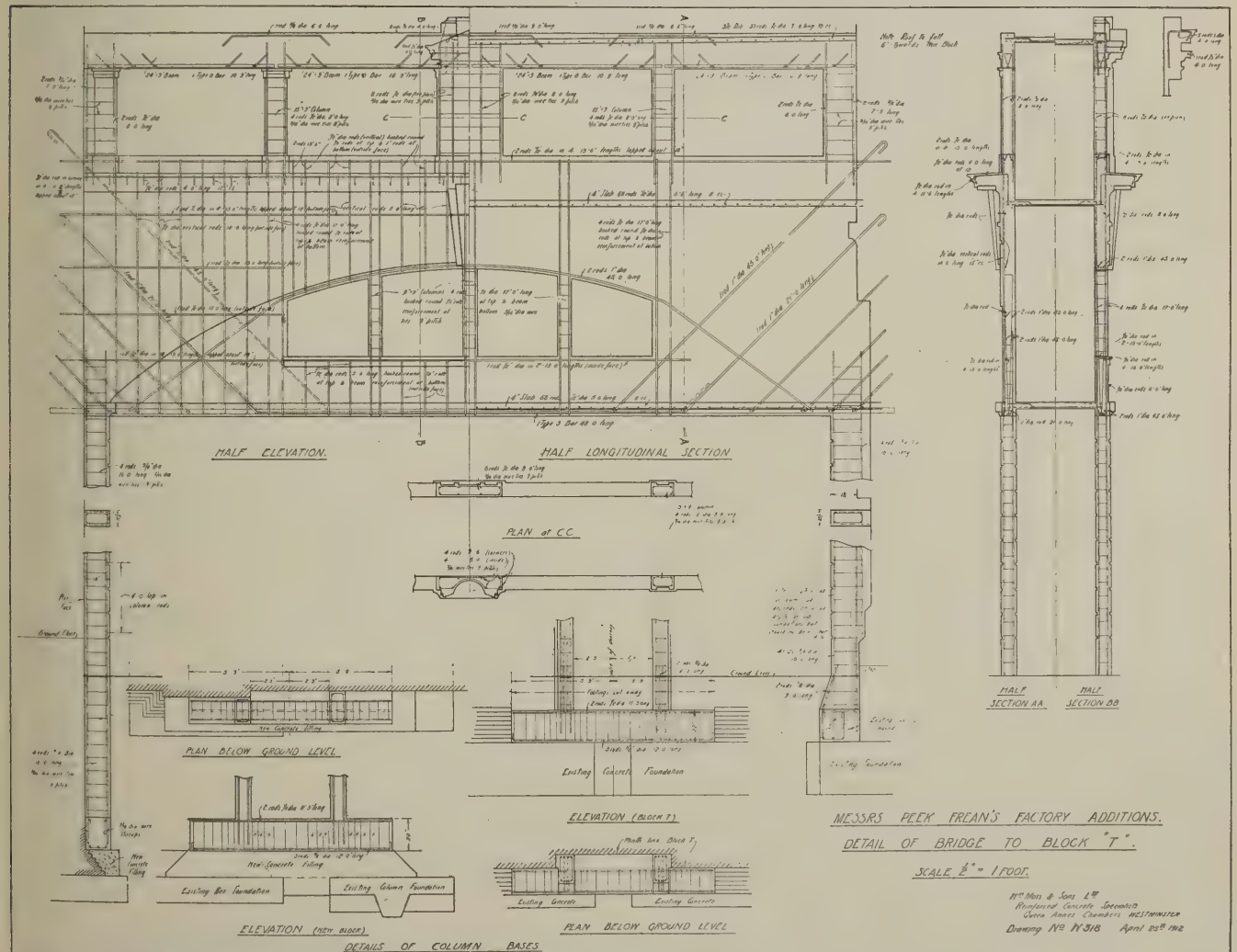
A REINFORCED CONCRETE FACTORY.

The accompanying illustrations show a new block of factory buildings recently erected in Keetons Road, London, S.E., by Messrs. Peek, Frean and Co., by Messrs. Wm. Moss and Sons, Ltd. As much of the building has been carried out in reinforced concrete as the present Building Acts will allow. It will be noted that the fire-escape staircase at one end is in reinforced concrete, as also the bridge which connects the new block to the old part of the factory. The goods lift enclosure (shown in the view on the next page) is in reinforced concrete throughout. The whole of the internal construction of the building is also in reinforced concrete, and the floors have been designed to carry $2\frac{1}{2}$ cwt. per foot super. A noticeable feature of the design is that the building, which, including the basement, is six stories high altogether, has been designed so that each column can carry double the normal load on the floors for the total height of the building, without any reduction of load whatsoever on the lower floors, as is generally allowed in most factory buildings. Owing to the enormous output of the factory, it is necessary at times, when



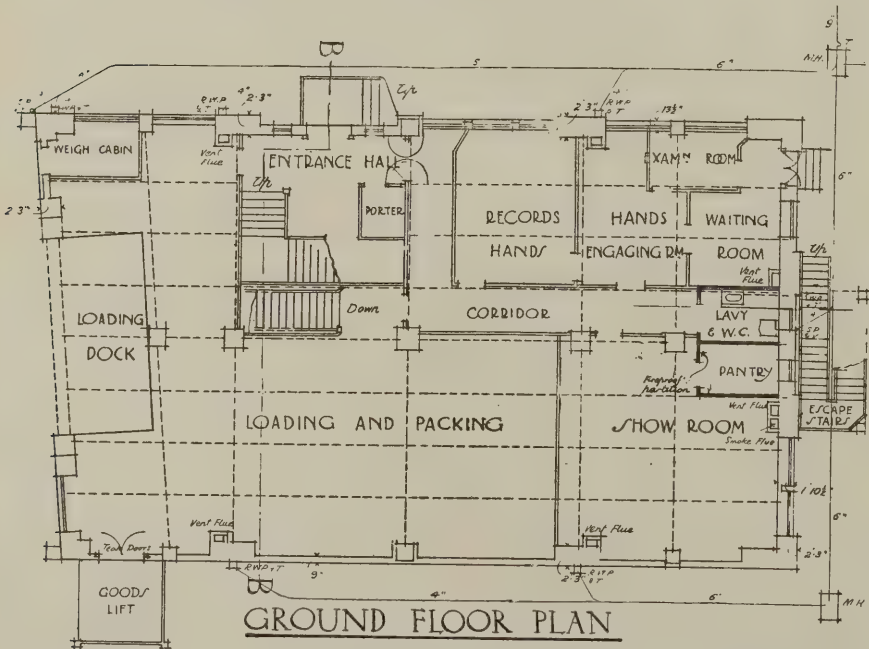
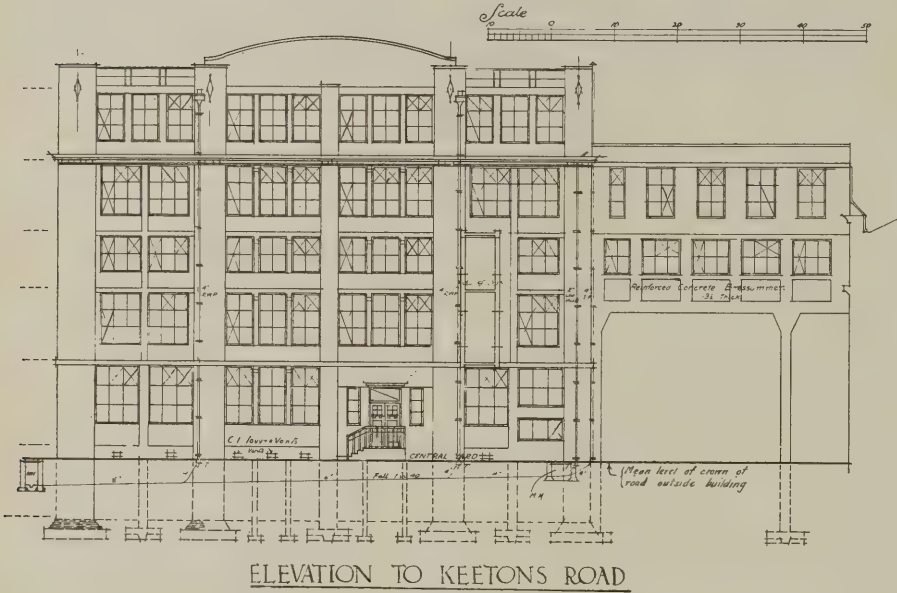
ADDITIONS TO FACTORY FOR PEEK, FREAN AND CO., LTD., LONDON, S.E.:
REINFORCED CONCRETE BRIDGE CONNECTING NEW AND OLD BUILDINGS.

preparing for shipment, to be able to store a vast quantity of goods, thus making the usual reduction per floor impossible in this case. Further, to assist in supporting the





Rear Elevation.



ADDITIONS TO FACTORY FOR PEEK, FREAN AND CO., LTD., LONDON, S.E.

heavy loads coming on the structure, the various floors, the mullions separating the windows have been designed as columns, to relieve the walls as much as possible.

The whole of the work was designed by the engineering staff of Messrs. W. Moss and Sons, Ltd., under the supervision of their chief engineer, Mr. de C. ville, the work in all trades being carried out by the firm's own workmen.

THE L.G.B. AND REINFORCED CONCRETE.

Last week attention was drawn in columns to Mr. Serrailier's vigorous test against the refusal of the Local Government Board to allow more than fifteen years for the repayment of loans on reinforced-concrete schemes, as compared with the thirty years granted for other forms of construction. Mr. Serrailier's letter to the "Times" has been followed by several others in which various interesting points are made.

Mr. G. C. Workman, M.S.E., M.P., declares that by the unaccountable attitude of the Local Government Board towards reinforced concrete, its progress is much hampered in this country. The argument put forward by the Local Government Board in support of its views on this question is, he says, that the durability of reinforced concrete structures has not been sufficiently proved. It is quite obvious, however, to all those who are acquainted with the question, he contends, that this is an excuse, and that in all probability there is some other reason which has not yet been made clear to any of those who are interested in reinforced concrete in spite of repeated inquiries. Is it possible, for instance, he asks, that the attitude of the Local Government Board towards reinforced concrete may be attributed to a desire to protect trade unions on account of the fact that works in reinforced concrete usually occupy a large number of ordinary labourers, who belong to no trade unions, than a building in other materials, where the majority of the employed belong to various trade unions? If there is anything in this suggestion would be well that the Local Government Board should realise that a building in reinforced concrete usually employs a large number of skilled carpenters, masons, and other men who belong to trade unions. In fact, there is a growing tendency to utilise more skilled labour than ordinary labour on reinforced concrete work, and in any case, putting aside the merits of trade unions, it seems unfair that the unskilled labourer should incidentally be deprived of earning his living. The fact that reinforced concrete work offers a field of employment for unskilled labour should, anything, be encouraged by the public authorities representing the interests of the community, instead of being penalised.

Mr. Percy J. Waldram thinks it not possible that the answer to Mr. Serrailier's question may be found in the history of the London County Council regulations to which he refers. Some twelve months ago these appeared in the Council minutes, having been drawn up by a joint committee, upon which were represented the Institution of Civil Engineers, the Royal Institute of British Architects, the Surveyors' Institution, and the Concrete Institute—viz., the different bodies who consent to any L.C.C. regulations necessary under the 1909 Building Act. It would appear from Mr. Serrailier's letter

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these regulations have been waiting the L.G.B. approval ever since, but is not the fact that as soon as they appeared writers in the technical Press began to point out that many of the clauses were open to grave criticism and that some were dangerous? Others probably, like Mr. Waldram, noting that the regulations as published in the council's minutes were, for all, merely a compilation by the council of suggestions made in committee by the different institutions (which suggestions not being necessarily identical or even consistent did not affect their statutory right of criticism), approached their particular institute direct with a view to their revision of certain clauses. Possibly the final regulations will differ from those sent to and "pigeon-holed" by the L.G.B. Of course, the regulations applied only to London, and as at first drafted could not have affected anything other than buildings wholly of reinforced concrete, and therefore enjoying the advantage of inner walls. If the ordinary thickness of walls were adhered to the designer could do exactly as he pleased. The Local Government Board has a wider field than London. Mr. Waldram concludes: "I have no means of knowing the official policy, but if it were 'let the professional bodies free on a local code and then offer to show longer loans in cases where that code is adopted,' it would at least be practical common sense."

Mr. Samuel Hutton, of Exmouth, writing as a municipal engineer who has been submitting schemes to the Board for many years, cannot agree that Mr. Serrailier's views of that body's attitude are quite fairly put. Since 1907 he has placed a few works before the Board which have contained some considerable portion of reinforced concrete; one instance was a reservoir roof (in 1907) in connection with the high level filters and reservoirs for the water supply of Exmouth. The maximum term of thirty years was granted for the whole, including the roof, and the sanction was given within five weeks of the inquiry. He is just completing a combined sea wall, shelter, and cantilever promenade about 110 yds. long in reinforced concrete. In many ways the structure is unique; the Board gave twenty

years' loan for this work. Last week he had a L.G.B. inquiry for a marine drive in which there is nearly half a mile of reinforced concrete sea defence, and also almost an equal length of reinforced concrete promenade behind a vertical concrete wall, and he anticipates a satisfactory loan period. At all the inquiries the inspectors have been quite sympathetic to reinforced concrete, and have impartially and fairly considered the calculations and arguments put before them. He adds that in the designs submitted he has always possibly erred on the right side as regards reinforcement and thickness of concrete, thus making due allowance for what he thinks is very vital in reinforced concrete work—viz., "the human or workman element." It is really a very small matter to add a little to the thickness of concrete and also an extra small margin to the reinforcement, as the preparations (such as timbering, etc.) are the same in any case; and this, he believes, would in many instances overcome objections from the Board's advisers. He declares himself as out and out a supporter and believer in reinforced concrete, yet cannot agree that the Local Government Board is unduly crippling or obstructing the use of "this fine addition to engineering construction."

THE PROTECTION OF STRUCTURAL IRONWORK.*

BY L. ARCHBUTT, F.I.C.

However interesting it may be from an academic standpoint to settle the very vexed question whether the presence of an acid is, or is not, essential to the rusting of iron, the practical importance of the point is largely discounted by the fact that under natural conditions the acid is always there. All water condensed from the atmosphere, whether in the form of rain or dew, besides being saturated with oxygen, contains in solution carbonic acid, and to this must be added, in the neighbourhood of towns where coal is burnt, and where chemical works exist, stronger acids, such as sulphuric, hydrochloric, and nitric acids.

* Extracts from a paper read before the Derby Society of Engineers.

Bacteria Cause Corrosion.

To the other causes which lead to the corrosion and destruction of ironwork must be added the action of bacteria. There are many kinds of bacteria in whose life-history the element sulphur plays an essential part. Some reduce oxidised sulphur compounds to sulphuretted hydrogen; others oxidise the sulphuretted hydrogen and store up the sulphur; others, again, further oxidise the sulphur to sulphuric acid, and produce an acid condition in the soil. The remedies for the external corrosion of ironwork caused in this way, recommended by Gaines, are free drainage, by which the acid secretion is carried away, and, where this is impracticable, mixing slaked lime with the soil to neutralise the acid which is formed. Cushman found that the addition of 5 per cent. of lime to boggy, sour land exerted a very marked protective influence on iron embedded in it.

Atmospheric Rusting.

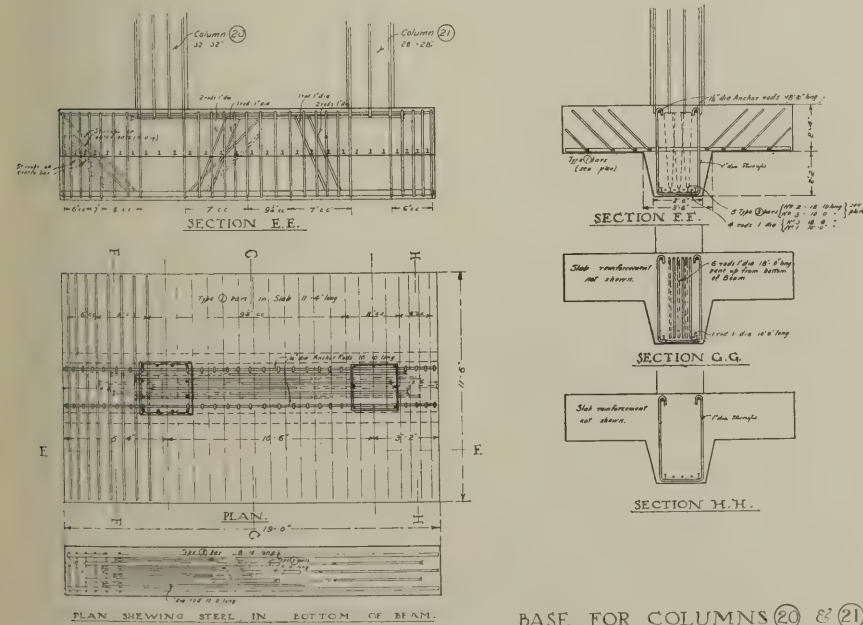
Sea-water, as is well known, is much more corrosive to iron than fresh water. For the preservation of iron or steel structures subject to atmospheric rusting several methods are available. Many years ago Barff, noticing the protection to rolled iron afforded by the mill-scale, proposed to form such a coating of scale upon the surface of iron or mild-steel articles by heating them to from 400 deg. to 600 deg. Fahr. in a current of superheated steam.

The processes of tinning and galvanising are much more extensively employed.

The weak point of galvanising is that zinc is a very easily corroded metal; it is easily soluble in weak acids, and even decomposes in boiling water, so that its protective influence does not last long under such conditions. Hence, for water-pipes, cisterns, and especially steam boiler-tubes, the protection afforded by galvanising is not likely to last long. The protection depends upon the thickness of the coating. It must also not be forgotten that zinc is a poisonous metal, and for that reason should not be used for drinking-water tanks or service pipes, especially for waters which contain much chlorides. Electro-deposited coatings of other metals, such as copper and lead, are also used for the protection of iron and steel plates.

Painting the Most Convenient Remedy.

For structures exposed to the atmosphere, by far the most widely adopted and convenient method of protection is by painting. Paints for ironwork may be divided into two classes: (1) Varnishes, containing no pigment, generally solutions of bitumen, coal-tar pitch, stearine pitch, or wool pitch in tar oils; and (2) true paints, composed of a finely-ground pigment suspended in a vehicle which is generally linseed oil. The number of such paints and varnishes is legion, and as each one, according to the statement of the vendor, is "perfect," they must all be equally good, and therefore I am spared the necessity of entering further into their individual merits and comparing one with another. I think our time this evening may be more usefully spent in discussing broadly the features of a good protective paint and the conditions essential for success. Of first importance is the preparation of the iron for the priming coat. I am considering here new ironwork, and not work which has already been painted. The sooner the iron receives its priming coat the better, and the greater the care and attention bestowed upon this priming coat the better will be the result for ever after. I think this is, perhaps, the reason



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why the stencil marks upon girders and such like are frequently cited as testimony to the value of white lead. They are put on while the girder is new, even hot, and quite dry, and they can be still found underneath the subsequently applied paint when it flakes off or is scraped off for re-painting. The iron for the priming coat should be quite dry, preferably even warm, so as to ensure dryness, and free from every trace of rust. Some engineers allow the iron to rust in order to remove mill-scale, but it is safer to remove the mill-scale by sand-blasting or wire brushes rather than allow rusting to commence. Rusting involves pitting, and unless the rust is scraped out of the pits down to the bare metal—a difficult and expensive process—rusting will go on underneath the paint. In experiments conducted with a great many well-known paints and varnishes I have found nothing better for the priming coat than genuine red oxide of lead—"red lead"—and genuine boiled linseed oil. The lead and oil should be ground together in a mill—not merely mixed by stirring—and should be of such consistency that when painted upon a vertical surface the paint will not run down. This, of course, means a fairly thick paint, and one that requires the expenditure of a liberal amount of "elbow grease" in its application. For it needs to be well spread with a good brush, not merely daubed on, but well worked into the corners and crevices, and not too thickly. I would employ the best workmen in putting on this priming coat, working under rigid inspection, and allow three or four days for the paint to thoroughly dry. The contractor's men can then come along and put on the subsequent coats, which can be of any desired colour and almost anybody's "anti-corrosive paint." The priming coat should contain no drier—it is not needed—and no turpentine or other spirit—nothing but genuine red lead and genuine boiled linseed oil. [Gaston Despierres recommends orange lead in preference to red lead. It is lower in specific gravity and more finely divided. This is a point worth noting.]

The so-called "drying" of linseed oil is, of course, a misnomer. The oil does not dry in the sense that a water paint dries—by evaporation of water; linseed oil dries by absorption of oxygen, which converts the fluid oil into a solid elastic skin of oxidised oil, and it is not desirable that any turpentine or other volatile spirit should be present which would evaporate and impoverish the skin. I am not a believer in tar varnishes for exposed ironwork. They tend to harden and become brittle; at least, this is my experience of such as I have tried. Neither have I yet found any oil to take the place of linseed oil. There are, of course, many other drying oils, and a very few, such as poppy and hempseed oils, can be used for painting, but at the present time suitable oils of this class are not available commercially, though they, no doubt, find their way into linseed oil as adulterants.

Permeability of Oil Films.

Every dry paint film is composed (1) of the pigmentary particles, and (2) of the oxidised oil varnish, which cements the particles together and sticks them on to the surface which has been painted. It is important to remember that oil films are by no means impervious to gases or to water vapour. Many ingenious experiments have been made in order to measure the relative permeability of dried oil films, by stretching them over bottles containing hygroscopic substances, and noticing the

relative increase of weight from time to time. It has been shown in this way that under the conditions which usually apply in painting, genuine boiled linseed oil gives a film more impervious to water than any other oil tested, but that the addition to the boiled oil of 0.5 per cent. of paraffin wax reduces the permeability by one-half, without appreciably reducing the rate of oxidation or "drying" of the paint.

Importance of Fine Grinding.

Turning now to the pigmentary part of the paint film, R. Job, in a paper read before the Franklin Institute in 1904, showed the importance of excessively fine grinding of the pigment. The particles should be small, not exceeding one-thousandth of an inch in diameter, and of uniform size, in order that the film may be filled as completely as possible with the pigment, and the particles packed together as closely as possible, leaving no free oil-spaces through which water can obtain access to the surface under the paint. You will see from these brief remarks how many factors enter into the successful protection of iron and steel work by painting. I am afraid painting is frequently looked upon as a very simple process, and that the main point to be considered is to get it done as cheaply as possible.

In places where water lodges, such as the bottom flanges of the girders of bridges, there is probably no better protective than Portland cement with which the hollow spaces can be filled, as recommended by Harriott, but if used as a wash, Portland cement lacks adhesive power, and flakes off. In damp situations, therefore, such as the undersides of railway bridges, protection by painting becomes more difficult, and it is especially in such places that a good priming coat on the new material will repay all the trouble spent over it.

Angus Smith's Process.

One of the most successful methods for the preservation of underground iron was patented many years ago by the late Dr. Angus Smith. In this process, as described by the author in his specification, coal-tar is boiled until all the water, the ammoniacal liquor, and the lighter oils are expelled, and the prepared tar is applied to the cast iron fresh from the mould. The process was invented for the preservation of water-pipes. The pipes are taken immediately they have been cast, before they have had an opportunity of rusting or acquiring any moisture, and after fettling they are put into a stove and brought to a temperature of 300 deg. Fahr. They are then lowered in a perpendicular position into the prepared tar heated to the same temperature, and left there for a sufficient time for the hot and fluid tar to thoroughly soak into the pores of the metal, then lifted out and allowed to drain. This process is carried out at all the large iron works in this neighbourhood where pipe-making is carried on. If properly done, the coating on the pipes, when cold, is tough, and not brittle or soft enough to be seriously damaged in the handling of the pipes. They should be laid in the ground soon after treatment, and not stacked for any length of time, as the action of the sun and air tends to make the coating become brittle and shell off. Like many excellent and simple processes, this has suffered at the hands of improvers, and one finds lime and other things added to the tar. I believe Dr. Smith does mention the addition of linseed oil to the tar in his specification, but I have never seen it added, nor does it appear necessary if the tar is good and properly prepared; and he

does not mention lime. One also finds the term "Dr. Angus Smith's Solution" in engineering specifications, but Angus Smith suggested no solution, and the use of tar varnish laid on with a brush is not his process at all, nor is it so good a protection for the iron obtainable by any such means.

Action on Hot-Water Pipes.

The action of water upon iron in water pipes and in steam-boilers is different. In the former the carbonic acid is retained in solution in the water; in the latter the gas is given off freely.

All natural waters, when heated, wrought-iron pipes, may be expected to exert a corrosive action on the iron at first, and whether the action continues will depend entirely upon whether the pipes do or do not become protected by a deposit of carbonate of lime. Galvanising will protect the iron so long as the zinc coating lasts, which will not be for long; but in the case of hard chalk waters it will probably last quite long enough to preserve the iron from corrosion until the protective coating of carbonate of lime has formed and will therefore prove advantageous for such waters.

It makes a great difference where there is a continuous flow of fresh hot water through the pipes, as in hot-water service pipes, or whether there is merely a circulation of the same water, as in heating pipes. In the latter case the carbonic acid and oxygen are not renewed, and the corrosive action, which is slight, soon comes to an end. One therefore never hears of the corrosion of heating pipes, the life of which is indefinitely long.

Sulphur.

One of the most injurious impurities in steel is sulphur, and one of the most active in causing corrosion. In all well-made steel the sulphur exists as manganese sulphide, disseminated throughout the metal in the form of more or less minute particles, which can readily be seen when a polished section is examined under the microscope. These form active corrosion centres, which are not electrolytic but lead to the formation of sulphuric acid by oxidation, which attacks the iron.

Strain and Mill-Scale.

The influence of strain on corrosion must be mentioned. The late Thomas Andrew worked and found that strain always causes a difference of potential, and the use of strained material should, therefore, be avoided where corrosion is likely to be set up by it. To this Friend attributes the unusual tendency to corrosion shown by indentation and abrasions on the surfaces of boilers.

The mill-scale, or skin of the iron, where it remains, must exert a considerable influence on corrosion. If it were intact all over the interior of the shell, it would be a valuable protection; but in bending the barrel-plates the greater part of the scale shells off, remaining attached only in places, and here pitting is promoted. The only remedy for this would be the entire removal of the scale. Tank-plates are treated in this way by the Admiralty by pickling in acid, but one would hesitate to recommend treating boiler-plates in this matter, for fear of rendering them brittle.

Reinforced Concrete.

The interesting subject of reinforced concrete can only be touched upon in the very briefest manner. So long as the iron or steel is completely encased in a compact mass of good cement concrete, preservation is perfect. Slight porosity is not harmful, provided the cement contains a

siently small excess of free lime. But the slightest electrolytic action is very dangerous, and therefore the best care must be taken to shield the from stray electrical currents from the station and tramways. Knudsen (Journal of the Franklin Institute, 168 [1912]) has shown how exceedingly ult this shielding becomes when the is used as a return, and the only way avoiding access of stray currents with inty is to use a non-grounded return.

NEWS ITEMS.

Practical Study of City Planning.
Specially appointed committee of the (N.Y.) National Conference on City Planning is to conduct this year a study in city planning, taking an area on the outskirts of a growing city of about 200,000 or 300,000 population. The description of the area and the details of the study may be had on application to the secretary of the conference, Mr. Flavel Shurtleff, 19, Congress Street, Boston, U.S.A.

Partnership Change.
Mr. Norman Thorp, A.R.I.B.A., announces that as Mr. T. H. Watson, with whom he has been associated during the four years at No. 9, Nottingham Place, is retiring from private practice, he (Mr. Norman Thorp) has decided to take in partnership Mr. E. B. Claypole, who for some eleven years assistant to Sir John Webb, K.C.B., R.A. Concurrently with the new partnership, the firm have taken larger and more convenient offices at, Argyll Place, Regent Street, W.

Extension of Business Premises, South Shields.
Extensions of the business premises of Messrs. Fowler and Brock, in King Street, South Shields, necessitated the remodelling and improvement of the existing premises, and the entire rebuilding of two blocks of property. A special feature was made of the shop fronts, which have been redecorated over the whole frontage of the building. The new premises are faced with Heworth Burn stone, while the shop fronts are of polished mahogany, with base of polished granite, and mountings and fittings of bronze. A feature of the work is the large island window, with two glass entrances at each side, the effect being to provide an arcade enabling the projection of the windows under cover. The general contractor for the whole of the work was Mr. Jas. Carruthers, and the architect was Mr. Hy. Grieves, A.R.I.B.A., of South Shields.

The New Stationery Office.
Good progress is being made with the construction of the new Stationery Office and stores for the Office of Works in Waterloo Road and Stamford Street, S.E. The work suffered some interruption through the recent miners' strike and dock strike, but it is now expected that the buildings will be completed before the end of next year. The new Stationery Office will be in two blocks, the larger one in Stamford Street being the warehouse, and the smaller one in Waterloo Road being the office portion. A short street, Bazon Street (formerly Bond Street), separates the two portions, but they will be connected from the level of the first floor and upwards by arched beams of 28 ft. span carrying a building 40 ft. wide and forming additional space for the offices. The length of the frontage to Waterloo Road is 100 ft., and the Stamford Street front is

323 ft. long. The building is being constructed of reinforced concrete. Including ground floors and basements, there will be seven floors in the warehouse and eight floors in the office block. The total floor area will be about 480,000 superficial feet.

Marble Craft Lodge of Freemasons.

The first ordinary installation meeting of the Marble Craft Lodge of Freemasons will be held at the Hotel Great Central, Marylebone Road, London, N.W., on Wednesday, November 27th. On this occasion members of the stone, marble, and granite trades, who are also brethren in the craft, will be specially welcomed. The company will meet in the vestibule at the north entrance of the Hotel Great Central, Marylebone Road, N.W., at 11 a.m. and drive to St. Paul's Cathedral, where the W. Bro. Rev. W. P. Besley will conduct them over the building, pointing out its chief features of Masonic interest. After lunch at the Mansion House Restaurant, the party will proceed to Westminster Abbey, where Mr. Weller will act as guide. Metropolitan and provincial brethren connected with trades indicated may obtain a card of invitation from the Secretary of the Lodge, Mr. H. Harris, J.P., 216, Mile End Road, London, E.

British Representatives at Rome Archaeological Congress.

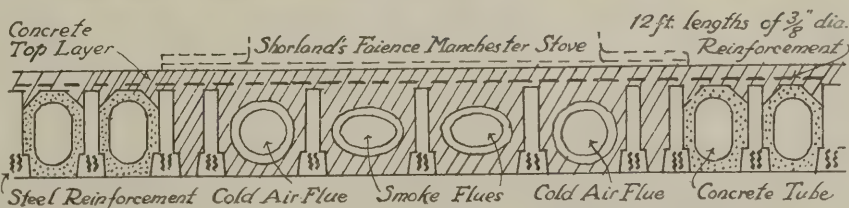
The British representatives at the third International Congress of Archaeology, held in Rome last month, included Sir Arthur J. Evans and Prof. Percy Gardner (British Academy and Society of Hellenic Studies respectively), Dr. H. Stuart Jones (Oxford University), Dr. Charles Waldstein (Cambridge University), Prof. John Wight Duff (Durham University), Dr. John Peddie Steel (St. Andrews University), Prof. Arthur H. Smith (British Museum), the Rev. J. Wood Brown (Royal Society of Edinburgh), Colonel

G. I. Plunkett (Director of the Dublin Museum, and representing the Royal Asiatic Society of London), Dr. Thomas Ashby (Director of the British School in Rome, representing the Society of Antiquarians of London), Professors S. H. Capper, R. S. Conway, James Tait, and Thomas F. Tout (Manchester University), Prof. Naylor (Adelaide University), and a representative of the University of Allahabad, India.

FLUES FOR HOSPITAL WARDS.

The method of fixing stove flues for air and smoke inlet and outlet at the new King's College Hospital, as described in our issue for October 16th, having attracted much attention and called forth many inquiries as to the details of the arrangement, we now give a further illustration and a few further particulars, which in this case, however, relate to work that was carried out at the Royal Infirmary, Sheffield, by the Armoured Tubular Flooring Co., Ltd., of Westminster, under the direction of the architects—Messrs. Gibbs, Flockton, and Teather, of Sheffield.

The accompanying illustration shows how the necessary flues for heating stoves (when the stoves are placed in the centre of wards) can be embedded in the floor itself, thus obviating the objection to beams showing under the floor—that is, in the ceiling of the wards beneath. The wards in the Sheffield Royal Infirmary are of a clear span of 26 ft., and the illustration shows very clearly how the tubes are embedded in the floor. In this instance the stove was one of Messrs. Shorland's. No beams whatever project in the long wards (more than 120 ft. in length), and we understand that this method of construction has been successfully employed in other hospitals where the wards are of even greater span.



ARMOURD TUBULAR FLOOR AT ROYAL INFIRMARY, SHEFFIELD.

SOCIETIES AND INSTITUTIONS.

THE ARCHITECTURAL ASSOCIATION.

"Small Country Houses of To-Day."

Mr. Lawrence Weaver's lecture on "Small Country Houses of To-day," given at the Architectural Association on October 28th, took the form of pleasant discursive comment upon a number of more or less familiar examples of modern domestic work. In a few introductory remarks, Mr. Weaver said he hoped that no one would think he was there to instruct architects about their own business, still less to advance any theories as to the course that the design of small country houses ought to take or was likely to take. He might say, however, that he did not think the sun of architecture first rose on Regent's Park, nor was he able to agree that Wren was a foolish old person whose chief function was to pave the way for the final glories of Soane and Nash.

Mr. Weaver showed first of all one or two houses by Norman Shaw and Philip Webb. The Red House, built by Webb in 1859 for William Morris, who was just about to marry, was, said Mr. Weaver, perhaps the first example of the conscious use of red brick as an artistic material. The plan was extraordinarily bad, apparently because of William Morris's liking for sunless rooms to sit in. "Coneyhurst," Ewhurst, Surrey, designed by Philip Webb towards the end of his career, was next shown. The plan, said Mr. Weaver, was quite reasonable, except for the big hall with doors opening round a gallery—a feature which did not make for privacy. Additions to "Chesters" in Northumberland, by Mr. Norman Shaw, concluded the houses which Mr. Weaver classified as belonging to the nineteenth century revival.

The remainder of the slides illustrated modern houses by a number of well-known architects.

Mr. C. H. B. Quennell, proposing a vote of thanks, argued that a house should be regarded in a more practical way. For instance, there was still much to be learnt about the practical side of heating and cooking. Progress would perhaps be made if we would only regard a house more from the engineering point of view. A motor car was a thoroughly practical thing, well adapted to its purpose; if the carburetter was a bad one it would speedily be removed and replaced by one that was good. And yet in houses we still suffered inefficiency and waste. Protesting against the growing passion for antiques, Mr. Quennell illustrated the absurdity of the craze by taking the case of a man who would drive up to his door in a twentieth-century "Rolls-Royce" and promptly sit down in the hall on a chair that was made for a man in chain armour!

Mr. Jenkins, seconding the motion, commented upon the modern demand for increased bathroom accommodation. There appeared to be a tendency towards the provision of a bathroom to every room—or at least a fitted lavatory to each. The speaker approved of the open loggia; if it faced south, it would be possible to take breakfast in it nearly all the year round. Heating systems could now be used without hopelessly disfiguring the interior of a room, $\frac{3}{4}$ -in. pipes being quite satisfactory in use. A small heating system costing about £40 would cut down the coal bill by half.

Mr. Arthur T. Bolton said that the whole question of modern house design amounted to finding a workable compromise between what the client wanted

and what really ought to be done. A man would perhaps want Jacobean windows, while his wife demanded French windows in order to be able to walk out on to the lawn. The problem of the architect was to reconcile his clients' opposing ideas and at the same time work out something harmonious in itself. Much successful work had been done in the Midlands—by Mr. Bateman, for instance, who had built over sixty houses in that locality; and the reason of its success was that the class of man who in London buys a house there builds a house, freeholds being very readily acquired.

Mr. T. L. Dale suggested that an advance might be made in matters of hygiene; useful notes could be taken from hospitals. Imitation antiques, he thought, were a great hindrance to the development of anything new.

Mr. Arthur Keen said that the houses shown were all delightful in themselves, but there appeared to be no definite standard of design. Uneasiness and over design were in nearly all cases apparent. There was a standard in guns, ships, motors, etc., but not in houses. Norman Shaw designed houses in every conceivable style, but he never arrived at anything ultimate. Webb, however, was fairly consistent. Scale, he thought, was a very real quality in domestic work.

Mr. C. C. Brewer disagreed with the motor car theory. He thought that more individuality would be expected in a house than in a motor car.

Mr. Weaver, in the course of a brief reply, said that so long as there were forty million people in the country there would be no general standard of design, since a multiplicity of different views had to be considered. Webb certainly maintained a standard, but he (the speaker) doubted whether architects of to-day could afford to treat their clients so inconsiderately as Webb treated his in order to achieve that standard.

ARCHITECTURAL ASSOCIATION OF
IRELAND.

The opening meeting of the session 1912-13 of the members of the Architectural Association of Ireland was held last week in the Rooms, No. 15, South Frederick Street. Mr. George L. O'Connor, F.R.I.A.I., president of the association, occupied the chair, and delivered the inaugural address. The chairman, in opening the proceedings, referred to the success which had attended Mr. Butler's efforts in connection with the National University Building competition. On behalf of the association, he wished to offer Mr. Butler their warmest congratulations. Mr. Butler had been a member of the association since 1896, and was one of their past presidents. They believed that in his hands the new University buildings would form a monument to be admired by his fellow-architects and the citizens. Mr. O'Connor, in the course of his address, dealt broadly and generally with architectural life in its relation to the public, and said the fact that fortune's wheel was turning for this country was evident by the increased activity in the building trade.

GLASGOW TECHNICAL COLLEGE
ARCHITECTURAL CRAFTSMEN'S
SOCIETY.

At a meeting held in this college last week, Mr. A. H. Purdie presiding, the society was addressed by Mr. Wm. H. Baxter, who took as his subject "The

Effect of Recent Legislation on the Building Trade." In order, he said, to understand how steadily oncost charges legislative burdens were increasing it was necessary to go back and examine some of the more troublesome Acts of Parliament and the effects, for example, of the Fact Acts, Workmen's Compensation Acts, National Insurance Acts. The stringency of the first two had been steadily increasing, and without a doubt, he said, the National Insurance Act would, ere long, become more burdensome. It was to him that employers had not realised the effect of such legislation in piling up oncost charges. The percentage of these was monstrated, also methods by which finite charges could be allowed for in ordinary contracting. Discussion followed. T. DAVIS, Joint Secretary.

OBITUARY.

Mr. John George Baker.

Mr. John George Baker, of The Rose Ramsey Road, West Hoathly, Sussex, of 49, Copenhagen Street, Islington, builder and contractor, of the firm Messrs. J. G. Baker and Sons, left earth of the gross value of £17,876, of which net personalty has been sworn at £10,310.

OUR PLATE.

Sculpture on the Wesleyan Hall.

On the Centre Plate in this issue we give a detail of the Sculpture on the main front of the Wesleyan Hall at Westminster. The Lion and the Ox, the Eagle and the Angel are symbolical of the four evangelists; the lamp is the Lamp of Truth and the female figure—one of two on either side of the window that lights the grand staircase—is holding the Fruits of Earth. The sculpture was executed by Mr. Henry Poole from sketches by architects, Messrs. Lanchester and Rickards, F.R.I.B.A.

COMING EVENTS.

Wednesday, November 6.
Edinburgh Architectural Association.—Mr. Francis Bond, M.A., on "French and English Cathedrals," at 8 p.m.

Thursday, November 7.
Architectural Association (Cambridge Sketch, and Debate Club).—Paper by Mr. H. Bart Tunnard and Mr. H. E. Moss, at 8 p.m.

Monday, November 11.
Architectural Association.—Mr. John Marshall on "Marbles Used in Greek Roman, and Byzantine Buildings," at 8 p.m.

Bristol Society of Architects.—Mr. Graham C. Awdry, F.R.I.B.A., on "Some Practical Remarks to Pupils, Architects, and Young Architects."

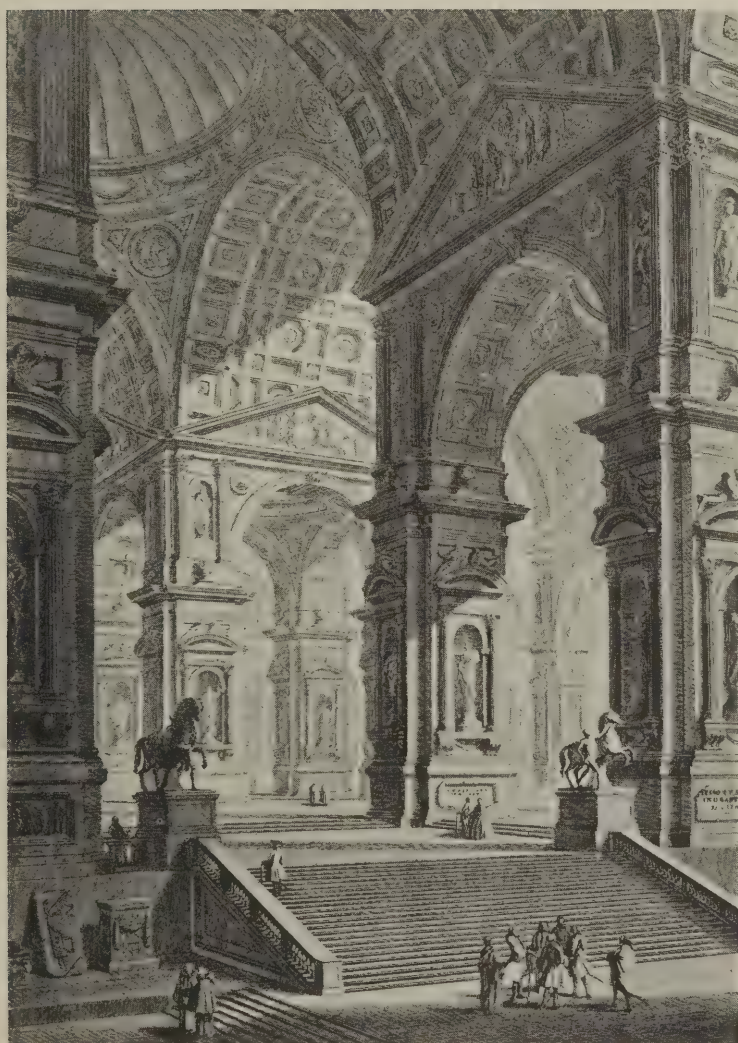
Tuesday, November 12.
Royal Sanitary Institute.—Discussion "The Report of the Departmental Committee on Intercepting Traps and House Drains," at 8 p.m.

Wednesday, November 13.
Manchester Society of Architects.—Paper by Mr. J. H. Worthington, M.A.R.I.B.A.

THE ARCHITECTS' & BUILDERS' JOURNAL.

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(From Piranesi.)



Photo : L. A. V. Cashmore.

LINCOLN'S INN HOUSE, KINGSWAY, LONDON: DETAIL OF GROUND STOREY.

E. L. LUTYENS, F.R.I.B.A., ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

NOVEMBER 13th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 930.

The Character of the Small Town House.

ARCHITECTS are wont to excuse themselves for the unsatisfactory character of the small houses which fill the suburbs of all our towns by dismissing them briefly and compendiously as 'builders' work.' This may be true in the strict letter. For the great majority of these houses we may feel sure no architect has been employed. The builder probably obtains such exiguous plans as the local authority demands—and these are chiefly concerned with the plans—from some junior assistant in an architect's office, and once he has secured these he traces and repeats them so long as he finds his houses sell.

It is not, however, the monotony of our suburbs of all houses which is their chief offence. There is, indeed, an artificial gaiety about some of the newer ones which is more distressing than any sameness. Repetition has innate dignity if only the unit of repetition is worthy. The quiet old streets centring around White Square, Westminster, present rows and rows of all houses as exactly alike as two pins, yet the whole neighbourhood, till those guardians of ancient wealth introduced a note of glaring commerce, was as satisfactory and restful a residential quarter as could well be desired. The late Georgian and early Victorian portions of all our towns contain now similar districts, and though cheap transit and the fluctuations of fashion may have changed their inhabitants from the clerks and small professional men for whom they were built to artisans and labourers or the very wealthy (as in the case of the White Square district), the houses at the time they were erected represented a solution of the small house problem architecturally far in advance of any corresponding house of to-day. Yet they probably came into existence in exactly the same way as do our own little red things. Some architect's assistant in all probability made their drawings, too, and there is no doubt about the way these drawings were used over and over again. If, however, we study at all closely their apparently bald and featureless fronts we see from the proportions of the windows, from the size of the window-sills, from their mouldings, and the hundred and one things an architect's eye takes in, that these houses not only have a very definite character, but that, featureless as they seem, without cornice or door hood, their character is exactly the same as that of the big houses in the Bloomsbury squares and of all the other recognised architecture of the period. It is, indeed, because they are the same refinement of spirit that they tempt us to live in them to-day.

The question, then, arises, do these little red houses to-day, or these little white-and-red houses, or even these little yellow, white, and red ones, bear the same relation to those larger country houses about which we are so apt to boast that they are the best modern product of our art? Are all these vainglorious little houses, which have brought the good old architectural term of "villa" into contempt, in essence little

Norman Shaws or little Philip Webbs? It is a disturbing thought, and yet one difficult to escape from. These little houses would certainly not have existed in their present form if Mr. Shaw had not broken into the stock brick and stucco of the London of the 'sixties with such iconoclastic buildings as Lowther Lodge. It was Mr. Shaw who hit on the truly epoch-making idea of placing the country house in all its countriness in the very centre of the town, and the little bay-windowed suburban villa of to-day is but an expression of the same thought. It must not be imagined that the town house with a garden has not always been with us, but till Mr. Shaw came it remained a true town house with a true town garden—the rightful descendent of the ancient villa, and London, like Paris before Haussmann, was very rich in these houses, and, indeed, still possesses not a few great ones in Mayfair and Regent's Park, and smaller ones in St. John's Wood. Such houses are town houses just as much as their sisters in crescent, terrace, or square. Set back in secluded gardens, they never allow you to forget the elegancies and proprieties proper to the town. But the town houses of Mr. Shaw and his innumerable followers, whether in Hampstead or Chelsea, interesting as they are individually, show none of this respect due to the town as a whole. They were the individualistic products of an individualistic age—the architectural expression of Manchester Radicalism combined with successful trading. Their little suburban offspring of to-day are but an expression on a lower plane of the same ideas. When, therefore, we tell our clients that all these new and distressing suburbs are the unaided work of our friends the builders we are only stating half the truth. The work may be theirs, but the ideas are ours, or were ours, a generation ago.

This is a very worrying thought, no doubt, but it contains within it the cold comfort of a highly moral value. It makes clear the wider responsibilities of all architects. Their work cannot be hidden or destroyed for many years. Of inexorable necessity it has to show character of some sort. Does that character truthfully reflect the best aspiration of the social life of the time? These are very difficult questions to answer of any current work, but an example may help us. Have the designers of our modern garden cities clearly thought out the true character of their enterprise? Do their houses express that character? Do we see in them any evidence of the new communal spirit for which these suburbs are supposed to stand? The great variety of the houses, the numberless picturesque "bits," how do these differ in character from the self-assertive "Queen Anne" suburban residences of the late Victorian era? If these are the bad sides of the garden city movement it is only fair to point out the better. In the unostentatious grouping together of residences, in the simpler and more refined detail which is coming back, we see again the architecture of the town rising superior to that of the individual. The communal spirit has marked all great periods of our art, and it is by such self-denying work that the young architect of to-day has his opportunity. C. H. R.

Cardiff and Its Civic Centre.

NOWHERE else in the United Kingdom can we point to such a fine group of modern buildings as are seen in Cathays Park, Cardiff; buildings, moreover, laid out on an ample and regular basis. Chief among them, of course, are the City Hall and Law Courts, by Messrs. Lanchester and Rickards, but there are also the Registry Office, by Messrs. Wills and Anderson; the University College, by Mr. Caröe; and the recently-completed Glamorgan County Offices, by Messrs. Vincent Harris and Moodie; while the erection of another fine building, the National Museum of Wales, of which Messrs. Smith and Brewer are the architects, is in progress. We note, therefore, with considerable satisfaction that a deputation from the Cardiff City Corporation has waited on the Office of Works in connection with a Government scheme, of which a few scanty particulars are available. It appears that the Welsh Insurance Commissioners and Board of Trade staff already occupy, as temporary accommodation, every available room in the City Hall and Law Courts, and for this and other reasons the Office of Works contemplate erecting a large building in Cathays Park for Government purposes. Local aspirations have had in view the provision of buildings for a Welsh Parliament, and it is on this account, and also, we presume, in connection with the arrangement of any new Government building in keeping with the existing scheme, that the deputation has waited on the Office of Works. We understand that the design for the contemplated new building is being, or has already been, made in the Government architectural office, but we think in this case that if any such building as a Welsh Parliament House is likely to arise, there should certainly be an open competition for the design. Competition has given all the buildings at present erected in Cathays Park, and there is every hope that it would furnish a fine design for a new Parliament House. In view of the fact that a Welsh Parliament is at present no more than a keen political desire, it seems perhaps a little premature to talk about the design of the building in which it would be housed; nevertheless, the Cardiff City Corporation has an eye to the future, and as so few municipalities possess any such outlook, we heartily commend their foresight.

Scaffold Accidents.

CONSIDERING the number of buildings which are always in course of erection throughout the country, the accidents that occur on scaffolds are comparatively few. But this would appear to be due more to luck than anything else, and it is only when we read the evidence given at a coroner's inquest that the risks incurred become apparent. Workmen in every trade will often neglect the very precautions which have been made imperative by law on their special behalf, just as miners will risk the danger of an explosion for the sake of a pipe. We recall an instance of a building in the Strand which was being painted. The painter had to stand on the window sills at some height from the ground, and in conformity with the requirements had tied a rope around his waist. To the policeman in the street it appeared that the necessary precaution against a fall had been taken, but, as a fact, the free end of the rope was not tied to anything, but simply lay on the floor of the room! And we find on building scaffolds a similar wilful neglect of safeguards. There is present, moreover, a good deal of the happy-go-lucky element.

We have our misgivings about the strength of many a balcony that juts out from a house front—only last Wednesday a balcony collapsed at Kilburn, causing severe injuries to a girl. So, too, with some scaffolds, in which last connection the recent fatal accident at Kensington has a sad application. The scaffold in this case stood in front of a building in Prince Consort

Road. At a height of 35 ft. a stonemason and three labourers were engaged in putting a cornice-stone in position. The staging on which they stood had a number of other stones on it, weighing in all, it was stated, about 2½ tons. Exactly what happened was not disclosed at the inquest, because no one actually witnessed the accident, but it seems fairly clear that the cornice-stone slipped and fell on to the staging which collapsed, taking with it the four men, the mason being killed and the three others injured. The coroner said the staging was not strong enough, or would have withstood the shock of the falling stone, and that unless precautions were taken to ensure the safety of stagings the position of those responsible would be serious. This is of course a very general warning, but it is one that should not be neglected by builders.

The Building Trade Amalgamation.

LONG before the result of the ballot was known we expressed our doubts in regard to the suggested amalgamation scheme for the whole of the building trades. At that time we were told that the rank and file were "practically solid" in favour of the scheme, but, as it turns out, there were 31,541 in favour of it and 12,156 against. As, however, the aggregate membership of the unions is 143,000, less than one-third of the men took part in the ballot. We are now told that though the amalgamation "is not to be carried into effect at the present time, it is thought that the discussions and ballots which have taken place will not be fruitless of results calculated to be beneficial to the men," and invitations are now being sent out asking the delegates of the various building trade unions to attend a conference in London next month, "at which the question of revising the scheme of amalgamation is to be discussed." Our own view is that the scheme is dead, and, further, we think that the elements of discord and jealousy which exist among the unions will, while they continue, make any such scheme an impossible one to carry out.

The Report of the Ancient Monuments Committee.

THE Joint Select Committee of the Houses of Parliament on the Ancient Monuments Protection Bill issued their report on Saturday last, and the recommendations they make are carried into effect. There is every likelihood of a stop being put to the vandalism and disfigurement from which many a relic of the past has suffered. The Government has been awakened sufficiently to take measures to preserve these heritages, which are possessions of the nation even though they may be under private control, and in the future we may be spared the spectacle of fine fragments of ancient work being shipped across the ocean or some unhappy "concerning" of an old building. If the Select Committee's recommendations are adopted it will be necessary in the future to obtain the consent of the Commissioners of Works before structural alterations to any scheduled monument are made, and it is also recommended that public notice should be given before faculties are granted for the alteration of churches, and the advice of competent architects taken whenever serious criticism is offered to the proposals. The Committee further recommend that a sufficient number of inspectors (ten are suggested) should be appointed to visit periodically and report on the condition of the ancient monuments in their districts, and that a special department of the Office of Works should be created to deal with the work.

It seems, then, with these adequate provisions, that our ancient buildings are likely to be looked after much better in the future than they have been in the past, and that the time has gone when an owner in whose grounds an old building stood considered he had thereby the right to alter or barter just as the fancy seized him.

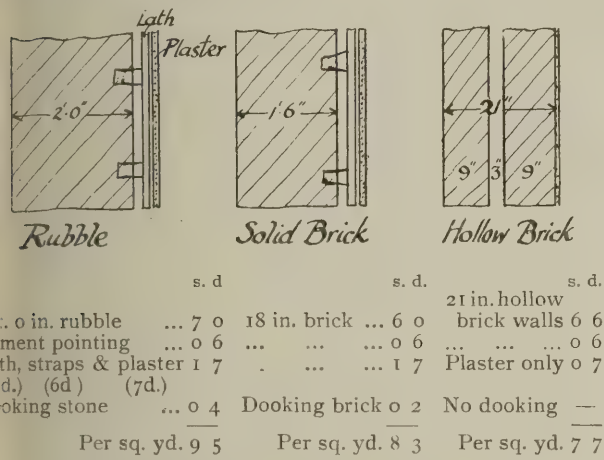
COMPARATIVE COSTS OF VARIOUS METHODS OF CONSTRUCTION.*

BY ALEX. H. PURDIE, I.M.

ARCHITECTS undertaking work for the first time on their own responsibility must often be confronted by problems of cost, many of which seem too trivial to ask special advice on, and yet the knowledge and experience, if available there and then, would save them much worry and enable them to arrive at the solution of their difficulties with a minimum of labour. The substitution of one method of construction for another involves so many changes of detail that only by a careful working out of the cost of each can the knowledge be ascertained as to which is the more economical method to adopt.

Walling.

Let us consider first the usual types of walling with which we are familiar:—



These figures give the relative cost per square yard of each type for plain walling where there are no openings; but when the work round openings comes to be considered the brick walls show up to be very much cheaper than the rubble. In brick walls the plumbing of a checked reveal, costing about 2d. per square foot in labour, is all that is necessary at the sides of a window, while a rubble wall requires hewn rybats with inside scuntions at anything from 2s. 6d. to 4s. 6d. per rising foot. Also, a simple cambered arch with temporary centre and support would serve to lintel over a 3-ft. wide window in a brick wall, the cost being about 6s. 6d., as compared with 11s. 6d. for a plain one lintel in a rubble wall.

I have worked out the extra cost over plain walling involved in forming a window opening 3 ft. wide and 7 ft. high in each of these types of wall, the results being as follows:—

RUBBLE WALL.		BRICK WALL.		HOLLOW WALL.	
	s. d.		s. d.		s. d.
Stone sill, 4 ft. at 2 3	9 0	Stone sill ...	9 0	Sill ...	9 0
D. rybats, 12 ft. at 3 0	36 0	Checked scuntions, 12 ft. at 2d.,	2 0	Sens, 2 0	
Lintel, 4 ft. 6 in. at 2 6	11 3	Arch and centre ...	6 6	Arch	6 6
	56 3		17 6		17 6
duct					
2 yds. plain walling at 9 5	18 10	2 yds. walling at 8s. 3d.	16 6	2 yds. walling at 7/7	15 2
	37 5 (say 37/6)		1 0		2 4

Again, the cost of plumbing external corners on the brick wall would be about 1d. per foot, against about 6d. for hammer-dressed corners on the rubble wall. By taking the proportion of corners and windows

and similar openings, which experience shows to be a fair average in ordinary buildings, and working out its effect on these different types of walling, the results obtained are:—

(1st.) 2-ft. rubble walling with openings and corners (per square yard over all without deductions)	12s. od.
(2nd.) 18 in. solid brick wall, ditto	8s. 4d.
(3rd.) 18 in. hollow brick wall, ditto	7s. 9d.

These figures give the comparative costs of only the simplest treatment in each type of walling, but they will serve as the bases for a variety of different treatments. For instance, the rubble wall may be faced with square-dressed rubble at an extra cost of—

6s. 6d. per square yard	
Or with rock-faced rubble at	5s. 6d. per square yard
rock-faced coursers at	7s. 6d. per square yard
finely dabbled coursers at	12s. 6d. per square yard
cleaned ashlar at	13s. 6d. per square yard

And the brick walling may be faced with selected common pressed brick at an extra cost of—

1s. 6d. per yard	
Terra-cotta facing brick at	4s. 6d. per yard
White-enamelled brick at	10s. 6d. per yard
Or cement rough cash	1s. 6d. per yard

These all entail slight alterations in cost at the window openings, but the prices per yard indicate with sufficient accuracy the relative values.

While considering the subject of walls, I might mention an erroneous idea I have come across. It is that windows in a wall are cheaper than the wall itself, and that therefore a large window space means a saving. This, however, is not generally the case. I have worked out two examples, the first being a 3-ft. by 6-ft. daylight window in a rubble wall with ashlar facing, and, taking the window to be of the simplest construction and finish, with plain plastered ingoing, the cost works out roughly at 40s. more than if the wall had been continuous without any window at all.

The second example is taken in a much cheaper wall—namely, a solid brick wall with rough-cast on the face. The extra cost of the window over plain walling in this case is 44s.

Within ordinary limits, and more especially in stone-faced walls, a three-light window is cheaper than three single windows of the same size, and a two-light window is cheaper than two single windows. The reason for this is that a narrow stone mullion is made to take the place of two hewn stone jambs, besides which, other internal savings are effected. A sketch will show this at a glance. Of course, the cheaper method is not always desirable nor feasible, but where it is both, the assurance that it is also more economical is comforting. I once saw some competitive drawings where, for the object aimed at, three-light windows were more desirable than single ones, and as economy was a consideration only second to efficiency, the competitors who adopted the single windows were placed at a serious disadvantage as compared with those whose plans showed three-light windows.

Floors.

The variety to be met with in floor construction is very great, but it is here proposed to keep to the more common kinds for the sake of simplicity.

First take the common joisted floor, consisting of 10-in. by 2½-in. joists at 18 in. centres, with solid dwangs, wallplates, deafening, flooring, lath and plaster as per section.

This floor, including the deafening and flooring and the lath and plaster, costs an overhead price of about 6s. 8d. per square yard.

Now, consider an ordinary concrete floor consisting of 6-in. by 3-in. steel joists with temporary boarding

* Substance of a paper read before the Glasgow Royal Technical College Architectural Craftsmen's Society.

and breeze concrete, plastered on underside and with flooring nailed direct on top of concrete. This floor works out at 9s. 6d. per square yard, assuming it to be carried on the walls and partitions without any carrying beams.

I need not go into the comparison of these with any of the many patent floors in the market further than to say that some of them cost roughly about the same as the concrete floor we are dealing with, while others are much dearer.

There is a point in dealing with fireproof floors which should not be lost sight of when comparing with wood-joisted floors. That is the saving in height of the building. The wood-joisted floor we are considering has a total thickness of about $12\frac{1}{8}$ in., while the concrete floor is in all about $9\frac{3}{4}$ in. thick. This difference of $2\frac{3}{8}$ in. is slight, but, in an eight- or nine-storey building it becomes considerable, and should be taken into account in the comparison.

I have worked out the amount of saving in the cost of walling, etc., which would be effected by a reduction of $2\frac{3}{8}$ in. in the thickness of a floor, and find that, expressed in terms of a square yard of floor area, it would be about 4d. This amount, of course, would vary according to the nature of the walls, whether they are cheap or expensive. There might be a still greater saving where a very thin floor is adopted, such as a concrete floor reinforced with steel rods, and totalling about 5 in. in thickness.

Unfortunately, I have not at present sufficient data in connection with the cost of reinforced concrete work to enable me to go into the comparisons as carefully as I would like. But the foregoing comparison of the two main alternative types of floor construction gives a fair idea of their respective costs.

Roofs.

The most usual method of roofing buildings in the Glasgow district is by means of a common sparred roof, consisting, in the case of moderate spans, of $6\frac{1}{2}$ -in. by $2\frac{1}{2}$ -in. ceiling joists, and spars, stiffened by 5-in. by 2-in. barks and outer pieces, covered with sarking and felt and slates. This form of roof is moderate in cost, and, besides being convenient in form, it provides an internal space which serves as a non-conductor of heat and gives suitable accommodation for water storage supply cisterns.

The cost of this roof, together with its slating and plumbing work, and the plaster ceiling which it supports, works out roughly at about 13s. 6d. per square yard of area covered. This figure is based on the assumption that slated hip ends are adopted.

The alternative methods of carrying up the gables and finishing with a stone skew is, of course, dearer, and I find on working it out in detail that the increase is about £5 5s. for each gable, which takes the place of a hip end. This result is arrived at by taking the gables to be of 14-in. brickwork, faced with terracotta bricks and finished with plain stone skews.

The next type for consideration is the bound roof. For the purpose of comparison, I have worked out the cost of a bound roof to cover the same area and span as in the case of the sparred roof already dealt with, taking a king-post roof as being most suitable, with purlins, and light common rafters covered with flooring felt and slates, and having gable ends, also a lath and plaster ceiling with bearers to carry same. The timbers are all taken sawn, as they are hidden by the ceiling. The cost in this case is 18s. per square yard of area covered.

Steel roof members of light construction are very much in favour, but more so where an open roof is wanted than where it is to be ceiled in. It is seldom that steel roof trusses are adopted for a ceiled roof of moderate span; but as the comparisons we are dealing with take the ceiling into consideration, I have thought it better to assume a case in which a steel-framed roof

is ceiled in, the trusses being covered by steel and wood purlins with 4-in. by 2-in. spars, sarking felt and slates. The cost in this case works out at 19s. 3d. per square yard of area covered.

I need not give you figures for the case of steel framed roofs filled in with concrete or other fireproofing material. They are, of course, more costly than the roofs we have been considering.

The foregoing give us three types of sloping roofs, the costs of which per square yard of area covered, might summarise as follows:—

(1) Common sparred roof:	
(a) with hip ends	13s. 6d. per yard
(b) with gable ends	15s. 0d. per yard
(2) Bound timber roof with gable ends	18s. 0d. per yard
(3) Steel-framed roof with gable ends	19s. 3d. per yard

With these I now wish to compare the costs of different methods of constructing flat roofs. As flat roofs have no depth to permit of trussing, it becomes necessary to provide carrying beams for wide spans; so still keeping to the same building as before, I have allowed in the following rates for the cost of the necessary carrying beams; also I have allowed for a low brick parapet finished with a plain stone cope, as this is the most usual method.

Taking first a timber-joisted flat roof, consisting of $6\frac{1}{2}$ -in. by $2\frac{1}{2}$ -in. joists, supported on steel beams with tapering pieces and flooring on top, and covered with 7-lb. sheet lead; the underside being lathed and plastered, and the walls being finished with a 9-in. brick parapet and stone cope. The price of such a roof may be taken at 27s. 3d. per square yard of area covered, but this figure is based on lead at a normal price, and not at the high rates current at present. Perhaps I should add to this the cost of snow staging as such a roof would almost certainly be provided with it. This roughly would add 5s. 6d. per square yard to the above figure, making in all 32s. 9d. for this type of roof.

The lead is a very expensive item in the cost of this roof. I have known flat roofs of this kind to be covered with canvas and rock asphalt on top of the flooring in place of the lead. If this were done, a saving of about 8s. 9d. per square yard of area roofed over would be effected. It is only right to add that in the event of the building being demolished at any time, the canvas and asphalt would have no value, whereas the lead would realise from 10s. to 15s. per cwt., according to the state of the market, and this represents about 8s. 9d. per square yard of area of roof, or practically the difference in first cost between lead and asphalt. There is the further consideration as to which material of the two is the less costly in upkeep, which has a direct bearing on the comparison of cost.

Then there is the type of flat roof constructed of steel joists, filled in with concrete tapered on top, covered with asphalt, and plastered on underside. Taking this in the same way as before, the cost works out at about 22s. 3d. per square yard of area covered.

Summarising, then, the costs of flat roofs, we get the following results:—

(1) Flat roof of wood joists (lead covered)	27s. 3d. per square yard
(2) The same roof with snow staging on top	32s. 9d. per square yard
(3) Do. do. (asphalt-covered—no snow staging)	18s. 6d. per square yard
(4) Do. of steel joists and concrete (asphalt-covered)	22s. 3d. per square yard

These can now be compared with the costs of sloping roofs.

For the sake of uniformity, I have worked out the various costs of these sloping and flat roofs on a simple identical plan of a building 45 ft. long and 27 ft. wide over the walls; and while the results are as near as possible accurate for the plan under consideration

y would vary slightly in dealing with other buildings. Sloping roofs are cubed to half-way up their height, which gives the actual contents, but flat roofs are generally taken to 2 ft. above their surface. The exact reason why 2 ft. has been fixed on is a puzzle to me, because the results obtained from it are erroneous. For instance, if a building with a flat roof is being valued at an overhead rate of 6d. per foot, which, let us assume, is the correct price for a building with a gabled roof, then for each square yard of roof area the amount will be as follows:—

1 square yard = 9 feet × 3 feet of height = 27 cubic feet at 6d.	13s. 6d.
We know that a flat roof with parapet costs per square yard	22s. 3d.
difference	8s. 9d.

Therefore the result arrived at with the 6d. cube rate and cubing to 2 ft. above the flat roof is short to the extent of 8s. 9d. per yard of area covered. If one is working off a cube rate which is based on buildings with flat roofs, then there is no error. But the point is one which I think is worth while considering carefully.

The different methods of finishing the eaves of a roof afford an interesting subject for comparison. I will sketch roughly three common methods: 1st, a projecting eave; 2nd, a projecting eave; and 3rd, an eave with stone parapet.

Taking the first method: The cost of the iron gutter with wood facing and moulding, also painting same, about 1s. 3d. per lineal foot of eave run.

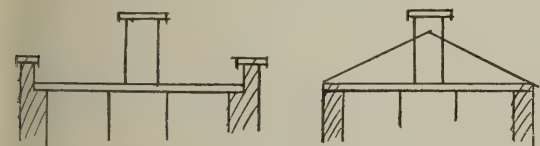
In the case of the projected eave, the cost of everything shown projecting beyond the face of the wall is about 3s. 6d. per foot; while the parapet eave with its stone work, lead gutter, etc., costs about 14s. per foot after allowing for the saving effected in painting.

A similar comparison in the case of skews gives the following result:—

Plain skews, with slates projecting slightly beyond the face of wall and pointed with cement	os. 6d. per foot
Projected skews, with simple barge boards and coping	2s. 6d. per foot
Plain stone skews with lead lining at slates	5s. 6d. per foot

With regard to the formation of roof-lights in roofs, it was, up till a few years ago, considerably cheaper to have wood sashes than to adopt one of the many excellent types of patent roof-glazing bars which are now on the market. But quotations for these are now very high, and it is quite as cheap to use patent glazing, if, indeed, it is not cheaper when the increased efficiency and smarter appearance of the latter are taken into consideration.

Another interesting study in connection with roofs is the effect on the cost of chimney stalks resulting from the adoption of flat roofs. This can best be illustrated by two sketches:—



The first method with the flat roof is identical with the actual example which came under my notice recently. The chimney-stalks, from the level of the flat roof upwards, were entirely of polished ashlar, whereas, if the roof had been a gabled and pitched one, only the exposed part above the eaves would have been of ashlar, the remaining or hidden portion being of common brick, about one-eighth of the cost. So that, in comparing the costs of flat roofs and sloping roofs, an additional extra allowance should generally be made

for the increased cost of chimney stalks on the former. The sketch also shows at a glance that a chimney stalk emerging from the ridge of a gabled roof will be less costly than one rising from the eave, as the latter has a greater exposed surface, which requires to be finished in a more expensive way. This fact accounts for the fondness which English architects of the garden city type of house show in grouping as many vents as possible into one stalk and carrying them out through the roof at the ridge.

Partitions.

I now wish to deal very briefly with the comparative costs of dividing partitions.

The most usual kinds in ordinary work are three in number: (1) Brick, $4\frac{1}{2}$ in. thick, finished with plaster on both sides. (2) Wood standards 4 in. by 2 in. and placed at 14-in. centres with dwangs, lath and plaster deafening, and finished on both sides with lath and plaster. (3) Slab partitions not less than 2 in. thick made in a variety of compositions by different makers, but generally stated to be composed of fine breeze concrete. These are finished on both sides by a thin coating of stucco.

The prices per square yard, including the finishing on both sides, are approximately as follows:—

$4\frac{1}{2}$ -in. brick	2s. 8d.
Lath and standards	4s. 8d.
Slab partitions	3s. 6d.

The $4\frac{1}{2}$ -in. brick partition should really be considered more expensive than the 2s. 8d. stated, when account is taken of the fact that it must be built up from the ground, with a foundation, under-building, and damp course, or it may be carried on a steel beam, whereas both the standard partition and the slab partition can be erected on any ordinary floor.

Each of these partitions has its own merits apart from the consideration of cost, but I do not propose to deal here with that side of the question.

I now come to the last heading of the paper, namely, the subject of *probable costs in connection with competitive designs*.

In sending in his design a competitor usually states what he estimates to be the probable cost, and this, you may take it, is seldom more than the amount stipulated in the conditions; but that will not save him from disqualification if his design is in reality more costly than the figure he hopes it can be built for, as most authorities take the precaution of having the probable costs checked by a measurer before the architectural assessor issues his award. I have often regretted very much to see good designs set aside just for this reason, and I feel certain that it is because the matter of cost is not carefully enough considered at the outset. The leaving aside of cost considerations is quite good where no hard and fast limit is made, as this allows the designer a freer hand, but in all cases where a maximum sum is stated the cost should be attended to at the roughing-out stage of the design, before any drawing to scale is done at all, so that, in the event of its turning out too high, the whole design can be reconsidered and modified to bring it within the required limits. This practice is regularly carried out by many architects, some of whom I have noticed in particular unfailingly come at or near the mark in the competitions they enter. It is comparatively easy for an architect, when he has conceived his design and sketched it roughly on paper, to jot down the dimensions and work out the cubic contents; then, by the simple application of the proper cube rate, which he has always means of ascertaining, he can check the cost at the initial stage, and so save much after trouble. I have, on more than one occasion, seen competitive designs just nearing the completion stage, on the eve of sending-in day, having to get a few feet rubbed or scraped off at the foundation, and a few more feet at the roof, to reduce the cubic contents, in order to bring down the cost as much as possible.

At the time of this first rough cost, not only the cubic contents and cost of the proposed building itself should be considered, but also all special sums to be allowed, such as for heating, ventilating, electric lighting, furnishings, boundary walls, laying out of grounds, professional fees, and clerk of works' salary. The conditions of competition, so far as they relate to cost, should be carefully looked into at this stage, and ample sums allowed for all items which the conditions state are to be included in the cost.

If this be done the final estimate of cost to accompany the finished design will come out near the right figure. An additional advantage of this method is that it causes the architect to be particularly careful to avoid waste spaces in any part of his design, for if he *must* squeeze the required accommodation within a certain cubic space he taxes all his ingenuity to get a compact and well-planned building.

I have only to add, with regard to the various comparisons of cost, that the conclusions arrived at are all based on local prices, and are subject to modifications in districts where affected by freights and cartage, plentifulness or scarcity of the materials involved, and other considerations.

THE STUFFY HOUSE.

THAT the air in the House of Commons is exceptionally pure there is no question—we know that it is passed through cotton wool, washed over screens, and warmed or cooled, as the case may be; but it is no less a fact that members become lethargic after breathing it for some time. For years there has been this complaint about the air of the House. Every detail of the arrangement has been scientifically studied and new plant has been introduced; yet members still grow limp under its influence. Responsible authorities both within and without the House have endeavoured to ascertain the reason, but no definite explanation has been forthcoming. There seems to be no doubt, however, that the real cause of the trouble lies in the uniform temperature—63 deg. Fahr.—at which the air is delivered. In the letter which we published in our issue for October 30th Dr. Leonard Hill suggested that the temperature should be varied by introducing a fresh, cool stream while members are in the lobbies, and subsequently re-establishing the current at 63 deg., and the belief that this would effect a real improvement is supported by evidence which is now put forward by the Rev. J. B. Lock, of Gonville and Caius College, Cambridge. Mr. Lock says that various systems of ventilation have been tried in the lecture and examination rooms at Cambridge—plenum systems, vacuum systems, and plenum and vacuum combined—with the result that it seems clear that a crowded room should not depend on the heat of the air sent into it for its warmth, but that the fresh air supplied for breathing should be cooler than the air in the room and that the room itself should be warmed by other means. In the large examination hall (106 ft. by 51 ft., seated for about 1,000 persons) radiators heated by hot water are placed near the walls at floor level. Fresh air is introduced into the hall by an inlet fan through two rows of gratings placed all along the two longer sides of the hall at the height of 8 ft. or 9 ft. above floor level. In the ceiling along the central line are seven large openings through which air is withdrawn by an outlet fan. The fresh air sent into the hall can be sent direct from the outer air, or it can be passed through a heating chamber containing coils of hot-water pipes. Thus fresh air of any desired temperature down to that of the outer air can be pumped into the hall, and by means of the radiators the temperature of the hall itself can be maintained at any desired level. The result of two years' observation, says Mr. Lock, seems to have established the fact that the cooler the fresh air sent in the pleasanter is the

atmosphere in the hall, and that when the hall is full it is difficult to send in air cool enough, even when the outside temperature is as low as 40 deg. These results seem to suggest that the main reason why the atmosphere of the House of Commons is so relaxing is that the pure air which is so liberally passed through the room is supplied at too high a temperature; it has indeed, been cooked, and thus has lost its invigorating qualities.

THE BUILDING OF COUNTRY COTTAGES.

THERE has been no lack of evidence put forward by writers in the Press, by medical officers of health, and by official compilers of Blue-books as to the disastrous housing conditions that prevail in country districts; yet nothing is done to remedy the trouble. Under existing by-laws the landowner is unable to build cottages that can be rented at the sum which the labourer can afford, and the labourer is unable to pay such a rent as would give a fair return on the capital invested in the building of cottages. The case is well put by two recent writers on the subject, Mr. Filson Young and Mr. E. W. Richardson. The former, in the "Pall Mall Gazette," has had the following sent to him by a correspondent: "I have a large cottage on my estate, which probably cost £250 or £300 to build. The rent is £4 per annum, with a acre of garden. A new roof and other repairs are required, and the estimates for doing them are from £105 to £120. I must do these repairs, and I can charge more rent. Multiply this expenditure, which brings in no material return, over even a small estate and see where it lands you." Mr. Richardson, in the "National Weekly," puts the case thus: "A substantial fairly roomy cottage costs about £200 to build. At 5 per cent.—which is not very much to expect at interest on capital, and to form a fund for repairs rates and taxes, collection, etc.—this means a rent of at least 4s. a week, and the agricultural labourer can only afford 2s. That is the secret of the dearth of decent cottages. The farmer cannot afford to sink his capital at even this low rate of interest, and the ordinary investor will not—and so no cottages are built." The problem is a serious one, a national one, and the consensus of opinion points to some sort of State aid as the only solution of it. The by-laws, too, will have to be made less stringent in country districts. In the last session of Parliament a Bill with this object in view was brought forward, but, unfortunately, it fell through; since then the President of the Local Government Board has issued a circular authorising local authorities to lessen some of the restrictions imposed by the existing by-laws. But this is a matter much too large to be tinkered with; there should be a drastic revision of the by-laws, such as would annul those provisions which make the building of cottages in the country so costly.

RESTORATIONS OF GREEK AND ROMAN WORK.

IN our issues for September 25th, October 16th, and October 23rd we published some plates showing fragments of ancient Greek and Roman architecture, from original drawings and restorations by distinguished French architects. These plates were reproduced from a work by M. d'Espouy, entitled "Fragments Antiques," published in two volumes by the Librairie Générale de l'Architecture et des Arts Decoratifs, 51, Rue des Ecoles, Paris (editor, M. Ch. Massin), price £6 per volume. The original publication shows the subjects to a much larger size than our own blocks, and the reproductions are made by the finest possible process—photogravure.

HERE AND THERE.

THE Architect as Sportsman. If one could but gather the material, a whole volume of good reading on that subject might be obtained. But I am afraid we should need to travel back a few generations—centuries, perhaps—for the bulk of it. How many architects are there to-day, forsooth, who can ride a hounds, can pull an oar, can show a pretty skill for the “fancy,” or put up a century to the credit of their bat? At last week’s opening meeting of the Royal Institute Sir Aston Webb at least reminded us that the new president, Professor Blomfield, was indeed a sportsman, and capable of doing something of what has been outlined above. And, if I am not mistaken, the Institute counts among its members several others who have distinguished themselves in the world of sport—was not Mr. Walter Cave a fine runner, and was not the late president, Mr. Leonard Stokes, a formidable man on the Blackheath football field? But, for all that, I am afraid it cannot be denied that the modern architect is not generally a sportsman in the true sense of the word. He is a product of the town and the office, and a certain æsthetic element in his training is likely to keep him away from the sports field and the gymnasium. Thereby he is the loser, for one might fairly anticipate that the manly courage which is demanded in real sport should well express itself in a vigorous execution in architectural practice. One has only to read the biographies of many a man of note to recognise the charm of vigour in all things. William Morris had this quality, and through it, instinctively, he became drawn to him. It is a type which is getting overlooked, but is none the less attractive—the strong attitude of mind and body that presses unswervingly towards a goal, as contrasted with the weak doubts, temporisings, and metaphysical analysis of the “precious” artist, the man of “temperament.”

In these days it is perhaps as hazardous to decry brickwork as to suggest the re-use of such a Gothic thing as a trellis-headed window. I will take the risk, nevertheless, of saying that we have gone on too heartily in our worship of brickwork, for the simple reason that the merit of such work depends very largely on its colour and its texture, and when we see a bald house built of bricks which are deficient in both those qualities there is occasion to anathematise brickwork. The red that flames on the south front of Wolsey’s palace, the warmth of colour that mingles with the texture of a Tudor or a Georgian wall—these are things far different from the dirty yellow of the London stock or the hard extruded face of the machine-made brick. Let us hide the latter under a growth of creeper or ivy, or cover it with a skin of tucco. It has been enthusiasm well directed, therefore, that has turned us to a better type of work.

Some visionary has already spoken of a London stretching itself from the South Coast to the Midlands, and another, in a more modest way, has suggested the embanking of the Thames from Greenwich to Hampton Court. Either proposal will stagger the ratepayer, but, without indulging in so ample a forecast, one may picture to oneself the embanking of the south side of the river from Blackfriars to Westminster. How much longer, indeed, shall we be content to see the magnificent scheme of Bazalgette shorn of its beauty by being confronted all along its front by a miserable array of wharves and warehouses? With the Albert Embankment beside St. Thomas’s Hospital as a splendid commencement on the south side, and the approaching completion of a corresponding embankment on the opposite side of the river, we have, in truth, the most admirable model before us, and it needs only a strong civic policy to carry on the good work

past the new County Hall to Blackfriars. There has been a habit of regarding the south side as “picturesque,” but, as a fact, it is an evil-smelling, ugly medley. With the single exception of the Shot Tower—the outline of which is ever graceful, despite the degradation of having advertising letters on its face—there is not a spot along the south side on which the eye can linger with pleasure; and it would be a grand improvement to sweep away the whole miscellaneous collection which now disgraces the noblest portion of the City’s highway. We should then have an embanked waterway in comparison with which the Seine at Paris would appear trifling.

The Seine, after all, is but a little river when compared with the great width of the Thames, and it does not present the same difficulty in throwing attractive bridges from bank to bank. But Waterloo Bridge is in our midst to prove that the greater width does not debar an equally fine—indeed a finer—result being achieved, for there is a greatness about Waterloo Bridge which no bridge across the Seine can equal. How much the more necessary, then, that our bridges, which leave so noble a thoroughfare on the north side, should connect on the south side with a similarly fine embankment. And a detail in the advantages of this latter would be that, being on the inside of the curve, it would be considerably shorter than the northern embankment, and so would facilitate the traffic to and from the railway termini.

* * * *

The lay critic is as busy as ever with our new public buildings. He is still under the spell of Ruskin, and sees architecture in a romantic glamour. That is why any important new building which is based on Renaissance or Classic lines is so roundly abused with ignorant criticism, while attempts to express architecture in terms of to-day—that is to say, attempts to produce buildings which are the direct expression of modern conditions—receive even fuller adverse comment. Bentley’s great shaft was freely called a gaunt chimney stack, and it is with no surprise, therefore, that I hear similar remarks applied to lesser buildings. The Wesleyan Hall has recently afforded ample evidence of the foolish architectural criticism which can be uttered by men otherwise intelligent, and now the London County Hall is, once more, a subject for attack by the lay critic. It is termed, “a flat-fronted factory of officialism,” a “monstrosity,” a “packing-case”—and in regard to the last term we are told that “the real authors of the packing-cases now called architecture—whether tilted up on end like the Kodak offices, or lying on the ground like the County Hall—are an active minority of professors and theorists who are determined to ‘go back to first principles’—in this case to an enormous primitive hut.” Writing for architects and those connected with building, there is no necessity for me to waste time and space in dispelling such mistaken notions: suffice it to chronicle these phrases as evidence of the attitude of mind which, unfortunately, exists among the lay public. The truth, no doubt, is that the mischief of the Gothic Revival is not yet spent, and until it is any Renaissance or Classic building may expect to receive similar criticism to that quoted above. As one writer has pointed out, these lay critics seem to regard an architectural style as a dress in which any building can be garbed, irrespective of its purpose, plan and construction. It is far too late now to design public buildings in the Gothic style, for the religious enthusiasm which wrought our great cathedrals is gone: we live under totally different conditions, the truer expression of which is to be found in Renaissance and Classic architecture.

UBIQUE.

CORRESPONDENCE

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents.

Correspondents are asked to be brief and to write on one side only of the paper.

Re-fronting Buckingham Palace.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Mr. H. H. Statham's letter in "The Times" on October 25 on the proposed new front to Buckingham Palace is so important that I hope you will allow me to support the contention that the lines of the middle of the building should be in contrast with those of the Victoria Memorial, for, as Mr. Statham says, "It does not do to have two central objects, one behind the other." The change suggested in the elevation is so essential if the Palace is to be worthy of its position, that I trust Mr. Statham will invite signatures to a Memorial to the First Commissioner of Works and Public Buildings, asking for a reconsideration of the scheme with a view to the middle lines of the new front of the Palace being kept horizontal and the wings being made the prominent features.

MARK H. JUDGE.

Pall Mall, S.W.

Scheme for Rebuilding Piccadilly Circus.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The accompanying plan indicates a scheme for the rebuilding of Piccadilly Circus.

The existing leases of the Crown lands are now about to fall in, which circumstance, if taken advantage of, renders possible the commencement of a scheme such as is here indicated.

The small scale plan, which is a tracing from the Ordnance Survey, shows the existing buildings, and the circles indicate the amount of land now vacant which would be utilised for buildings, and the sites of existing buildings that would be thrown into the roadways. It will be seen that these are about equal in area, so that what building space is lost in one position is gained in another.

Most street improvements entail a tremendous out-

lay, and the benefit accruing thereby is very seldom of a monetary nature. By continuing the buildings right round the Circus, not only would the architectural design be emphasised, but a considerable annual income would also be gained.

Assuming that only four floors over the archways are built, this would give approximately an increase of floor-space (as indicated) of about 51,000 ft. super suitable for restaurants, offices, business and other premises. This area could be increased by additional floors, and by building the archways and the superstructure of larger dimensions in the length of the streets.

The scheme lends itself to the control of street traffic, as the main lines of traffic are direct. "Islands" for pedestrians would be formed where shown, and also at both ends of the central piers carrying the archways at the entrance to each of the main streets.

The plan is only intended to indicate the scheme and possibly by the planning of moving stairways at several convenient intervals a colonnade of shops at a higher level could be worked in, with an increase of rental advantage. Provided the access is easy, and the colonnade is of sufficient length to ensure a good variety of shops, there is no reason why such a plan should not be as successful in London as are the famous "Rows" of Chester.

The Shaftesbury Memorial could be refixed in its central position, or the centre feature could be a memorial to King Edward VII. with a statue of the late King on a base of suitable design surrounded by sculpture.

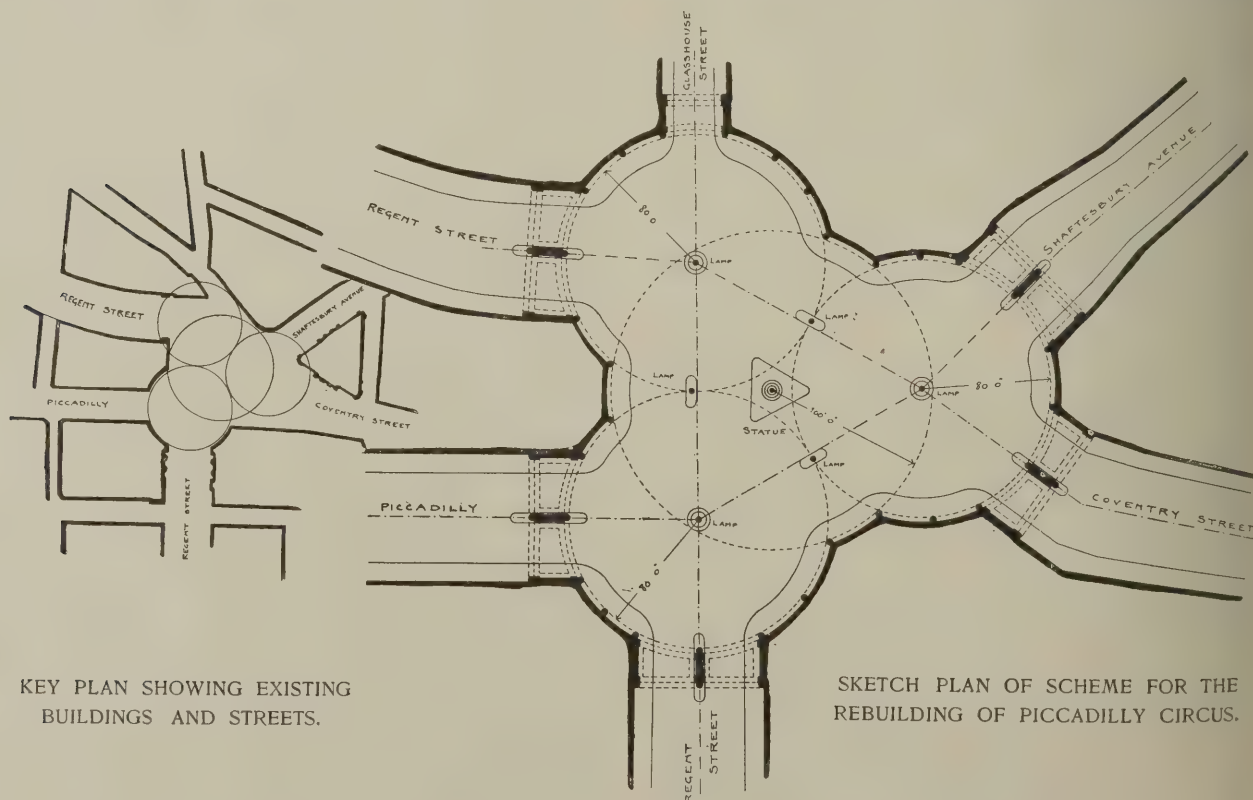
London.

G. F. M. MERRIMAN.

The New Delhi.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Those who advocate a return to what they are pleased to call the Palladium style of Madras and Calcutta, which existed in the days of John Company, do not seem to realise that plaster whitewashed is not architecture. Before 1857 all buildings in Calcutta and Madras—cathedrals, churches, Government houses, public offices, and private dwellings throughout the length and breadth of the land—were plastered



itations or adaptations of designs found in architectural treatises, and other illustrations. Little or attention was paid to the material beneath the plaster, for all seemed to believe in the native bricklayers' dictum "*sub burrabur ho gaiga musalla sei*" (plaster will make all smooth). The era of railways produced sound materials, and to railway engineers, not architects, is due the honour of the first approach to architecture proper in India.

R. F. CHISHOLM, F.R.I.B.A.

London.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I shall feel obliged if you will spare space to allow me to express an opinion on the new city of Delhi.

As we all know, the main factor in the ultimate artistic success of the undertaking will be the adoption of a suitable style. Of course, the latest opinion of the expert, that the stamp of the British Sovereignty should be put on Delhi by the use of the Renaissance of Inigo Jones and Wren, is likely to find many advocates. But buildings like the Taj give sufficient elements to study the purest Saracenic architecture, and if this be combined with just the spirit of the purest Grecian work, but not with its details, we shall have a very healthy combination to suit the present conditions at Delhi.

Bombay, India.

X.

Society of Architects' Examination.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In reply to the correspondence in your issue of October 30, I did not set the question on foot-candle-power nor examine the candidates' answers, but I thought it was generally known that the intensity of illumination is now usually given in foot-candles, and in other words, the particular illuminating effect at any point is expressed in terms of the equivalent number of standard candles at a distance of one foot away from that point: that is, the strength of the illumination is specified instead of the strength of the luminant. As Mr. Waldram puts it, one is the measurement of cause, the other the measurement of effect, and it is the effect that is the essential thing.

Further, I did not intend to suggest that quantity surveyors used tables instead of the fraction $\frac{7854}{10000}$, because I do not know of any duodecimal tables. My experience is that when they want the area of a circular dimension they always multiply by 9 inches 5 parts after squaring the diameter.

London, E.C.

HENRY ADAMS.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—As a student and teacher for some thirty years I am much interested in the correspondence opened by "W. (Dublin)."

For some time past there has been an increase in what may be called "trick" questions. Such would possibly never arise in practice, and some are quite impossible. Others, again, may have two utterly different, but correct answers, to the same question, as Professor Henry Adams himself has shown in one at least of his books when answering a P.A.S.I. examination question. Is it not probable that the examinee will take one and not the other as his solution?

Again, in *viva voce* examinations the personal element comes in. Only the other day I was told of a Civil Service examiner who is reported to have said that, given a small man of undoubted ability and a big man of far less ability, he always chose the latter as being able to command those under him. Possibly

he meant better "able to commandeer" the brains and work of those under him.

Again, the aim of some questions, in my opinion, is to give advantage to the man who works on paper over the man using tools. Thus, a good workman is often outclassed (by examination) by the clerk, who has had no practical experience.

When a man's whole future depends upon the result of an examination, question and answer, examiner and examined should be of a most impartial nature and above suspicion.

London.

A. W. B.

Wind Pressure on Roofs.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The figures given by Mr. Waldram in your issue for October 23 are valuable, because they are based on actual tests, and are not merely arithmetical solutions of a formula which pretends to an accuracy that is obviously unattainable. But there is one point which I am not clear about: Are we to understand that in these laboratory tests the pressure registered was the pressure per super feet of roof or the pressure per super feet of the vertical plane?

If the former, suppose for example that we compare two roofs, each, say, 1 ft. wide and 10 ft. high, one 30 degrees and the other 45 degrees pitch, then in the fourth case in the table of tests we get a total pressure on the 30-degree roof of $14 \times 2 \times 10 = 280$ lb., but on the 45-degree roof, same height, $18.8 \times 5.2 \times 10 = 266$ lb. only. and if 60 degrees the pressure would be 270 lb.

Colchester.

E. A. SLATER.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The figures given in my letter in your issue of October 23, deducted from the Natural Physical Laboratory's experiments, represent the pressures at right angles to the roof slopes in lbs. per ft. super. of sloping surface, which occur when the wind-pressure against a vertical plane would be 30 lb. per ft. super.

Mr. Slater's difficulty appears to arise from overlooking the fact that a roof at 30 degrees rising 10 ft. would be spanning 34.62 ft., whereas a roof at 45 degrees rising to 10 ft. would only be spanning 20 ft., and a roof at 60 degrees rising 10 ft. would only be spanning 11.54 ft.

Such a severe reduction in the size of the roof naturally discounts the total wind pressure materially.

London, W.C.

PERCY J. WALDRAM.

THE STAIRCASE HALL OF THE OLD WAR OFFICE.

OF the thirteen buildings in Pall Mall which, before the advent of the Royal Automobile Club, constituted the old War Office, only a few portions have been preserved. Buckingham House, the last of the thirteen, which contained the oval staircase hall shown in the illustrations on pages 526 and 527 of this issue, is commonly supposed to have been wholly built by Sir John Soane for George Grenville, Earl Temple and first Duke of Buckingham. This, however, is not the case. There remained in the house a few features, chiefly in the basement, which were apparently preserved from an older building, and it was probably this older building which is said to have been let to the Duke of Gordon in 1785. Judging from a panelled chamber, it may have resembled Schomberg House, having been built during the same period.

In 1790 Soane, who was not knighted until some forty years later, began operations, which went on till 1794. Soane was at this time becoming famous, his

extremely correct and strictly Classical work at the Bank of England having been universally admired. Unfortunately he almost at once began to cultivate a somewhat affected originality. The portico of Buckingham House may be accounted the last part of Soane's work, the staircase having been apparently the earliest. In the staircase, accordingly, we have a clear reminiscence of some good Vitruvian or Palladian building, which Soane had seen and studied in Italy. There are faults in his interpretation of the Ionic Order, and mistakes in the application of a design to a London street more suited to the sunshine of a Southern climate. But the whole effect of the staircase was extremely pleasing, and it had less of the Soane mannerism than any other part of the work. The oval plan was happily carried out, with a single flight of stairs of studiously plain design, dividing at the first landing and rising on either side to a most picturesque first-storey gallery, with Ionic columns, a series of cameo-like reliefs above, and higher still a row of caryatides supporting a sky-lighted dome.

The front of the house in Pall Mall, it may be recalled, almost resembled the work of Vanbrugh in disregard of the ordinary rules of proportion. The pillars of the portico contrasted unpleasantly with some neighbouring examples of Wren's treatment of the Tuscan Doric, and the whole elevation was singularly dull and gloomy.

THE NEW DELHI.

THE latest addition to the discussion on the new Delhi which has been going on in the columns of "The Times" for some weeks past is made by Mr. James Ransome, F.R.I.B.A., late Consulting Architect to the Government of India. It is humiliating to confess, says Mr. Ransome, that amongst the masses of masonry with which we have strewn India during the best part of two centuries there is not one building to which we can turn in our present straits and of which we can say, "This building, while admirably fulfilling the purposes for which it was erected, is of sufficient architectural excellence to serve as a basis on which we found the architecture of our new capital." But, continues Mr. Ransome, "if the study of Anglo-Indian buildings is not inspiring it is at least conducive to grave doubts as to whether our policy of insistence upon style may not have choked the development of an Anglo-Indian architecture suited to our requirements and possessing the attributes of truthful construction and directness of purpose upon which all good buildings are based. Architectural progress is mainly the result of altered conditions, and the most formidable obstacle to this progress is a prejudice in favour of standards of beauty based on conditions which have changed. Any prolonged period of unaltered conditions ultimately results in the reduction of architecture to an art of selection from that which has been already expressed, and in such circumstances the inevitable demand for novelty tends towards decadence. . . . Yet, while we clamour for a new style of architecture at home, we are seriously debating whether the new capital of India shall be Classic, Gothic, Renaissance, or Indo-Saracenic, forgetting that the crux of the whole question lies in the fact that Englishmen dwelling in the plains of India need buildings as unsuited to England as the native buildings are unsuited to their requirements. It matters but little what style of architecture be selected for the new Delhi. Her buildings will be beautiful if designed by an artist, but their efficiency will be in ratio to the extent to which their designers subordinate style to the exigencies of local conditions, and it were better for the health and comfort of our countrymen in India and for the cause of Anglo-Indian architecture that the new city were frankly utilitarian and unlovely rather than that her buildings be crippled by the imposition of any style evolved under alien conditions."

WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS.

AS the fourth example in this series we illustrate the Centre Plate of the present issue a detail of Sir Aston Webb's Admiralty extension at the Charing Cross end of the Mall. The building consists of north and south wings joined together by three arches, the roadway running beneath and giving access to Trafalgar Square. The south wing, which communicates with the principal Admiralty building by bridge, is devoted entirely to office accommodation but the north wing contains the official residence of the First Lord of the Admiralty. The sculpture on the building is the work of Mr. Bertram Mackennal. On the angle of the north wing, facing towards the Mall (see illustration on page 525), a pedestal has been provided for a statue of Nelson, which is to be carried out by Sir Thomas Brock, R.A.

MODERN SMALL HOUSES.

THE third example in this new series is given on page 521—a cottage at Boreham Wood, Hertfordshire by Mr. Edwin Gunn, A.R.I.B.A. Economy dictated the use of the common local brick, which, though hard and well burnt, is unpleasant in colour and texture. "Seconds" were used to secure less regularity of shape, and the work was built in cement and limewashed, with overburnt reds from another local fire for the porch and chimney.

R.I.B.A. PROBLEMS IN DESIGN.

ON page 523 of this issue we publish two approved designs for a senate house for a modern university by Mr. Ernest Prestwich and Mr. Ernest Gee, both students at the Liverpool School of Architecture.

In our issue for October 30th, when publishing the list of approved designs for this subject, we stated that Mr. Dod and Mr. Prestwich were the first to have completed their preliminary work for the Final Examination under the new regulations by having four designs approved in succession. But Mr. K. Glover, of Shotley Bridge, co. Durham, writes to say that he also is one of the first students to have had all four designs approved, and, further, that he expects to be the first student to submit an essay as a thesis.

A GERMAN RAILWAY STATION.

WE illustrate on the opposite page the new railway station at Mülheim-on-Rhine—a good example of modern German work. We regret we have been unable to ascertain the name of the architect. It is probable, however, that the building was designed in the Architectural Department of the Prussian State Railways.

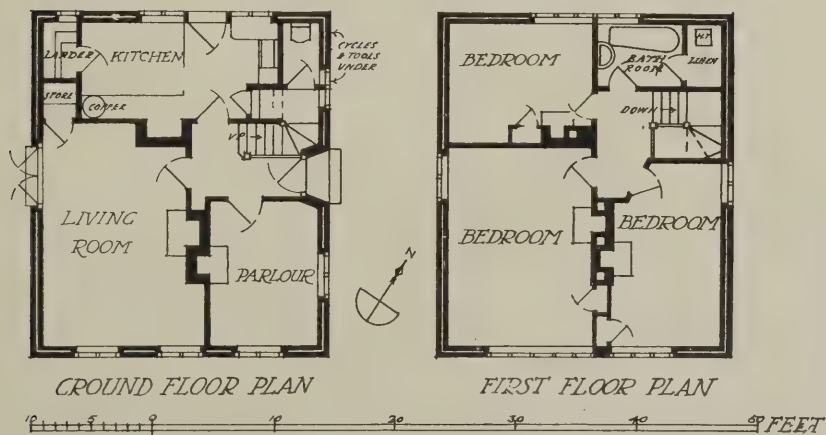
The plan does not differ essentially from those usually followed for such buildings. Opposite the main entrance and at the end of the deep entrance hall which runs parallel with the longitudinal axis of the station place, are the booking offices. On the left of the entrance hall, opening on a lateral hall, are the two waiting rooms, one for first and second-class passengers, and another for third and fourth-class passengers, with their buffets and dependencies, and also a passenger tunnel leading by staircases to the platforms. On the right of the entrance hall are the luggage rooms, and connected with them at the back is a luggage tunnel, with lifts to the platforms. The total cost of the station was £21,500.



NEW STATION AT MÜLHEIM-ON-RHINE (PRUSSIAN STATE RAILWAYS).



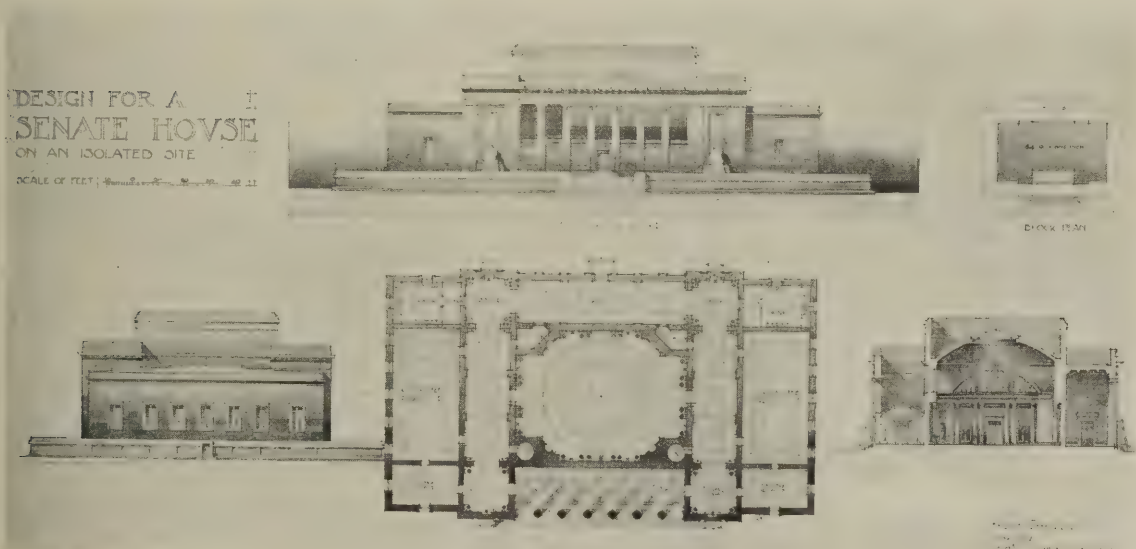
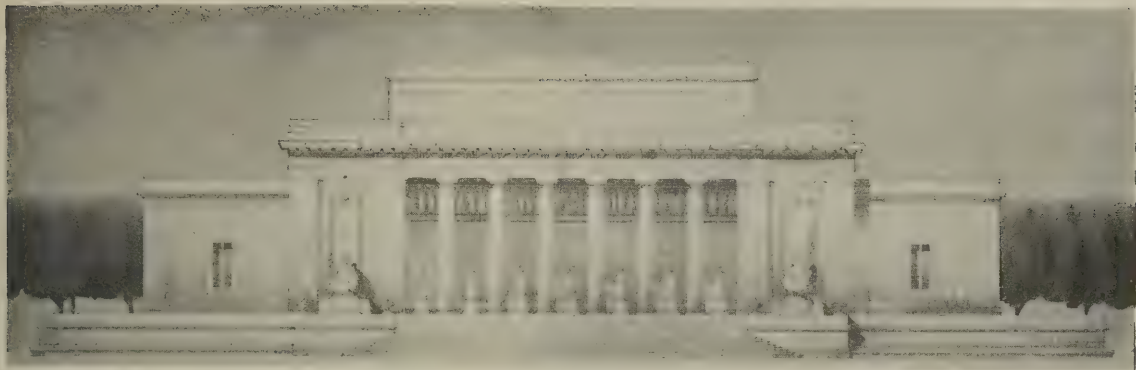
*COTTAGE at BOREHAM WOOD,
HERTS*



Edwin Gunn, Archt.

GROUP
IN THE
1911

STUDENTS' PAGE.



By Ernest Prestwich (Liverpool School of Architecture).



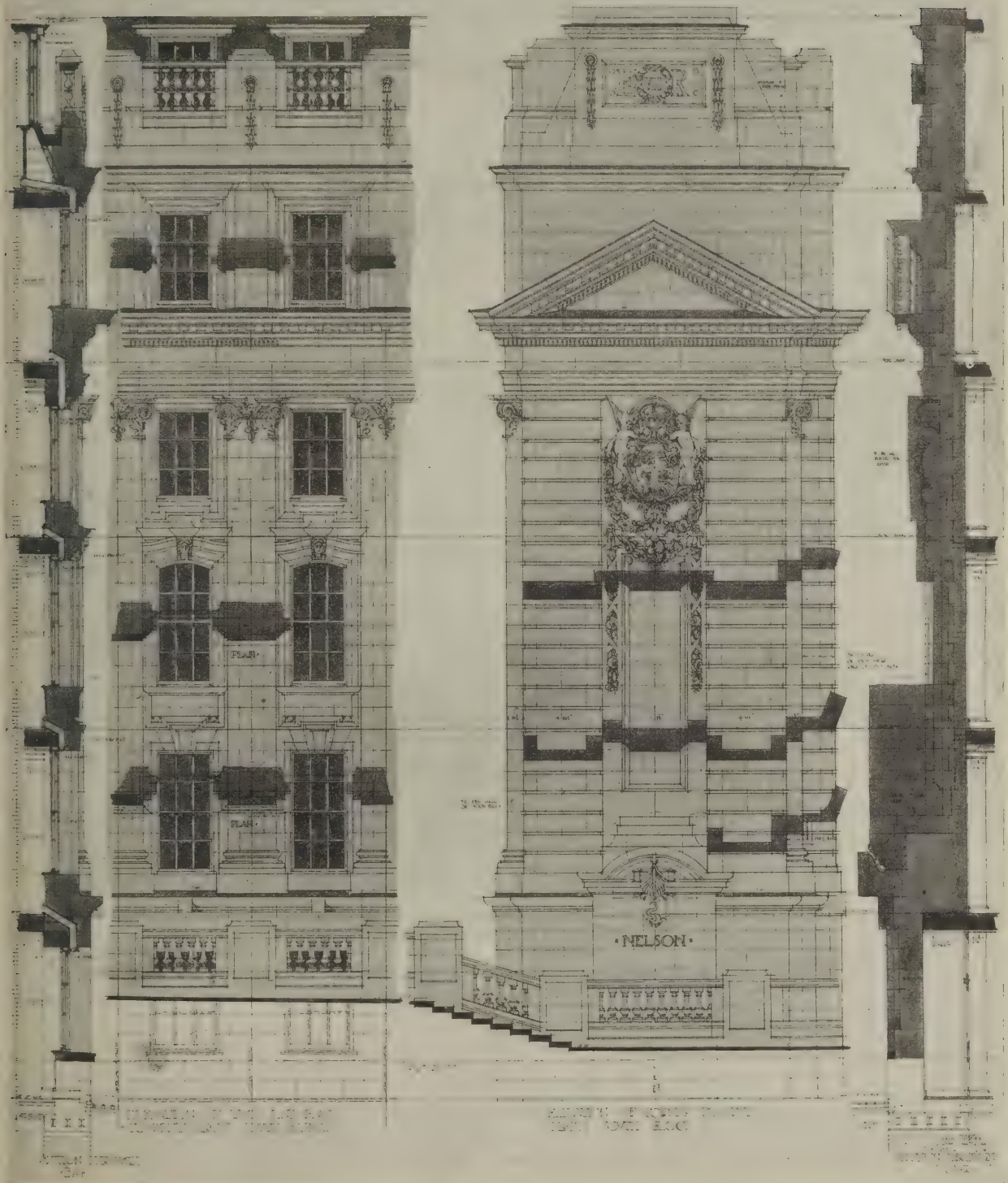
By Ernest Gee (Liverpool School of Architecture).

TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION: APPROVED DESIGNS FOR SUBJECT IV. (A)—
A SENATE HOUSE.

OF THE
1710

ADMIRALTY SPRING GARDENS

DETAILS OF BAYS TO SHOW ELEVATIONS OF SOUTH BLOCK & ANGLES TO MALL.



WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS. IV.—THE ADMIRALTY BUILDING, SPRING GARDENS, LONDON.

SIR ASTON WEBB, C.B., C.V.O., R.A., ARCHITECT.



THE OVAL STAIRCASE HALL IN THE OLD WAR OFFICE, PALL MALL, LONDON, (NOW DEMOLISHED).

SIR JOHN SOANE, ARCHITECT.

(See page 517.)



THE OVAL STAIRCASE HALL IN THE OLD WAR OFFICE, PALL MALL, LONDON (NOW DEMOLISHED).

SIR JOHN SOANE, ARCHITECT.

(See page 517.)

NOTES ON PAINTING AND DECORATION.

BY ARTHUR SEYMOUR JENNINGS.

Fugitive Colours in Wallpapers.

It is time that a strong protest was made against the fugitive colours used in the manufacture of wallpapers. Some time ago I made some careful experiments with ingrain by exposing a portion to the light while an adjacent part was protected, and the result was that even in two weeks a perceptible loss or change of colour took place, while at the end of three months in most cases the colour had changed so considerably as to bear very little resemblance to the original. I believe the manufacturers have come to the conclusion that ingrain papers that are permanent cannot be made. No doubt, as the colour is added to the pulp, there are technical problems which it is difficult to overcome, but in the case of ordinary papers printed in distemper there is not the slightest reason why colours should not be used that are practically permanent, or which will last without fading for, say, five or six years. The trouble is by no means confined to cheap papers, for even those which cost 3s. or 4s. a piece will often be found to fade considerably. The manufacturers, on receiving a complaint, usually answer that a paper is not expected to last more than three or four years, as at the end of that time most people like fresh paper and change in the design. This is no doubt true to some extent, but when a fugitive paper is used trouble occurs if pictures or any principal pieces of furniture are changed in the room at the end of a year, for it then becomes absolutely necessary to repaper. One does not frequently move the heavier furniture, but in the case of pictures (now almost universally hung on picture mouldings) it is often desired to make some change in their position. It is highly desirable, therefore, for every reason that greater permanence should be given to the colours used in wallpapers. One would think that the manufacturers would see to this themselves in view of the severe competition from the various washable water paints, which are mostly permanent in character.

Non-poisonous Paints.

It is a significant fact that the demand for lithopone or zinc sulphide paint, zinc oxide, and other non-poisonous pigments, is so large that the total output of the world is not sufficient to supply it. Speaking with an importer recently, I learned that paint manufacturers who give orders for one hundred tons of either material have to be content with twenty or thirty tons to go on with, and my informant said that this condition of things was likely to continue until the additional factories, now being erected with all speed, are in working order. Zinc oxide is made in England at Widnes, but nowhere else in this country. It is, however, imported extensively from America, and also from Belgium, Holland, Germany, and France. Lithopone or zinc sulphide is made in this country on a very large scale—in fact, the inventor, Mr. J. B. Orr, has a large factory at Widnes, but we also receive great quantities from the countries mentioned above. Of course, the large increase in the use of these materials is partly due to the improvement in manufacture and the desire among the public to use non-poisonous pigments, but princi-

pally to the fact that the merits of them have been appreciated after investigation. It is not usually known outside the trade that lithopone is the base of nearly all of the first-class washable water paints now so popular.

Outside Dull Black.

A difficulty is often experienced in getting a dull black which can be used on outside ornamental wrought-iron work, such as a grille. A perfectly dull surface that is jet black is frequently desired. I have been inquiring closely into this subject and experimenting recently, and I find that those which are really dull or flat wash off in about three to six months, while those which are more durable become glossy at the slightest touch. A good lampblack mixed with turpentine and gold size is frequently recommended, but is not really reliable. I have reached the conclusion that the most serviceable article of the kind is a black flat enamel, which will outlast any of the others, but even this will need to be renewed at the end of eighteen months to two years.

Decorating on Patent Plasters.

Every architect must have had trouble when decorating either with washable distemper or otherwise on the various patent plasters. Even the best washable water paint will come off in a most unaccountable manner. There is only one way to deal with these plasters, and that is to apply a liberal coat of sharp oil paint—i.e., oil paint mixed in the ordinary way but with very little oil and an excess of turpentine, but the whole success of the operation depends upon this coat being given while the plaster is wet. It is no use giving it the next day or the next week. In the painter's parlance, "the brush must follow the trowel"; the paint thus forms part of the plaster, and within a week or so of becoming hard may receive a coat of distemper with safety.

Enamel Paints.

Long ago I made the assertion that enamel paint of high-class quality is the most durable and therefore the cheapest of any in existence, and correspondence with a large number of firms recently has confirmed my opinion. An enamel paint specially prepared for outside exposure will last for at least eight (and in some cases ten) years. In a London atmosphere it will become encrusted with dirt within twelve months; hence a periodical cleaning is advisable; but this cleaning is obviously less costly than repainting. The coating of soot appears to have some protective quality, although one would imagine that the sulphuric acid contained would be very destructive. The probability is, however, that the acid is washed out with the rain, leaving a coat of pure carbon on the surface. The extreme brilliancy or gloss on the surface disappears after a year or so, but the enamel film is there, hard and free from cracks. I have before me a board painted with an enamel and exposed for seven years, and, excepting the loss of gloss, it is in as good a condition as when it was first put on. This loss of gloss is rather an advantage than otherwise, because it increases the value of the foundation when repainting

becomes necessary. In painting outside work with enamel a thoroughly good foundation should be given, and then two coats of the enamel applied, the first being slightly thinned with turpentine. Under coats may be white lead if desired, but some of the special "under coats" now on the market answer much better, and are decidedly cheaper.

"Landscape" Friezes.

Happily, the use of the so-called "landscape" friezes in small houses is rapidly dying out, and perfectly plain white friezes distempered with the ceiling are taking their place. The chief objection to the narrow landscape friezes is that the scene repeats so frequently—perhaps a dozen times along the wall of an ordinary size room—as to become drearily monotonous. The plain white frieze gives very satisfactory results, although a picture moulding at the junction between frieze and wallpaper is, of course, absolutely essential. It is hardly necessary to remark that, in speaking of a "white" ceiling, one does not mean actually white. The old plan was invariably to add a little ultramarine to the whitewash, but decorators nowadays are aware that much better results are obtained by using a very little of the colour that prevails in the wallpaper. In most cases a very light buff ceiling—just a break from the white—is much more satisfactory than a dead white.

Picture Mouldings.

Speaking of picture mouldings reminds me of one of the facts that these are now becoming recognised as a necessity even in small houses. Beyond their utility and convenience in supporting pictures, and facilitating a change in the position of them as often as may be desired, they fill the important function of protecting the walls because they do away with the necessity of driving in nails. In the cheaper class of residences the plaster work is not always of the best, and putting in nails for pictures plays havoc with it, especially in the partitions, where there is no firm backing. This means a destruction more or less of the plaster, and while it does not cost very much to make the necessary repairs the new plaster used in the patches is nearly certain to show through or discolour any new paper that may be put upon the wall. If the wall is done in washable water paint the trouble is even worse, for it is almost impossible to conceal the patches. It may be taken, then, that it is worth while to put picture mouldings in all rooms—including the kitchen. In old houses that are about to be redecorated they should always be put in without loss of time, and if plain friezes are used in the manner suggested it will be found that their cost will be saved in the smaller quantity of paper required. Some architects urge that the proper position of the picture rail is on a level with the top of the frame of the door, but, without going so far, it must be admitted that a deep frieze—say 18 in., or, in the case of a lofty room, 21 in.—always gives more satisfactory results than a narrow and skimpy one. This, however, is essentially a matter of proportionate dimensions, the larger room demanding the deeper frieze that would dwarf the smaller room.

THE CARE OF ANCIENT MONUMENTS.

The Joint Committee of the two Houses of Parliament on the Bills now before the House of Lords relating to the preservation of ancient monuments recently heard evidence from Sir Schomberg McDonnell (the secretary to H.M. Office of Works), and from Professor Reginald Blomfield, R.A., president of the Royal Institute of British Architects.

In answer to the Chairman, Sir Schomberg McDonnell expressed the view that the procedure by Order in Council was preferable to a preservation order, inasmuch as the latter did not provide for keeping a monument or restoring it, but only prevented damage being done. He was in favour of allowing an owner to sell if he desired, provided the monument was under the care of the Commissioner of Works Department. The new owner would have to take over the obligations of the former one. As regards ecclesiastical buildings, plans of proposed restorations and additions should be submitted to the Advisory Board, which should get the bishop of the diocese to move in the matter by asking him not to allow certain things to be done. He would go so far as to suggest that the Advisory Board should not only advise but, if necessary, intervene. The chief inspector of monuments should be appointed for Great Britain, with four assistants for England, four for Scotland, and two for Wales. He also suggested the desirability of giving grants in aid in respect of monuments maintained by county councils.

Professor Reginald Blomfield said that the cathedrals of England, which were the most important national monuments in the country, had suffered much from reconstruction and restoration within the last hundred years. In his view the Advisory Board should be strengthened and its functions more clearly defined. The Royal Commission should also take observation of monuments of later date than 1700, as some of the most charming buildings in England had been erected since then. Absolute power should be given to prevent the export of buildings of historic interest to foreign countries. He questioned the suitability of the Office of Works to deal with all ancient buildings, and suggested that a civic department should be created for the purpose, and that the Advisory Board should have wider powers and a stronger representation than was proposed.

Mr. C. R. Peers, inspector of ancient monuments, urged that a preliminary schedule of recognised monuments of historic interest should be prepared, to which nothing should be done without the consent of the Office of Works or of the Advisory Board.

THE HIGHEST SCOTCH DERRICK IN LONDON.

The big Scotch derrick shown by the accompanying illustration has just been erected by the contractors, Messrs. Colls and Sons, on the site of the new premises for the Hong Kong and Shanghai Banking Corporation in Gracechurch Street, E.C. The derrick, which stands 140 ft. above the ground level, is the highest in London at the present time. On account of its having to carry two cranes, the derrick is built with four legs—two king legs and two queen legs—the cranes working above the former, which are specially

strengthened with additional timber. Each jib extends a further 80 ft. above the platform level, so that the total height when the jibs are vertical is 220 ft. All four legs are anchored to the ground with chains and loaded with bricks, in order to counteract the tendency to lean when heavy loads are being lifted. The centres of the legs are 36 ft. apart. When our photograph was taken only one crane had been erected. This is capable of lifting a load of seven tons. The second crane, which is now in position on the opposite king leg, will lift a load of five tons. The tower which can be seen in the background is that of St. Michael's, Cornhill.

PORTABLE SCHOOL BUILDINGS.

Dr. C. B. Moss-Blundell, who was last year appointed the first whole-time medical officer for Huntingdonshire, in a note to the county education authority questions the wisdom of erecting substantial school buildings constructed of stone or bricks. "Every county," he writes, "has its 'white elephants' in the shape of cumbersome or unsuitable premises. Modern schools are better adapted for the purposes for which they are intended than were the older ones. But we have not reached finality yet; far from it. Consequently it follows that if we can build at a lower price temporary buildings to last, say, thirty

years, we are in a better position than if we build a permanent structure to last a century, but which is obsolete for the last seventy. Schools are like Dreadnoughts or motor cars; they are all right until something better comes along. My contention is that if we can build temporary schools at about £2 a head to last thirty years, we are better off than piling up bricks and mortar at £10 a head, and wishing five-and-twenty years hence that we could pull the thing down and start afresh. And we can build them at a price approximating the interest paid on the loan for a permanent school. We can almost build them out of current funds."

Among other advantages of this class of building, Dr. Moss-Blundell claims the following: "They may be easily moved from one district to another, or rooms may be added or taken away according to the changes in the population. This is a very important point nowadays when town populations are increasing and villages decreasing. In the event of their not being required as schools, they may be moved to a suitable site and used as isolation hospitals or for other purposes; their very portability makes them saleable. The objection that has been raised against them in the past has been that they are hot in summer and cold in winter. This no doubt was the case in the old galvanised iron structures, but the question of equability of temperature has been com-



Photo: J. W. Minnitt & Co.

THE HIGHEST DERRICK IN LONDON, ON THE SITE OF NEW BANK
PREMISES IN GRACECHURCH STREET.

pletely solved in modern buildings, and it is my belief that we should be well advised in giving a trial to this class of school in this county."

Dr. Moss-Blundell suggests that before embarking on any scheme for extensive structural alterations to old premises it is well to remember that it may be false economy to put a new patch into an old garment; in the first place the "patch" usually costs about twice as much as expected, and secondly, when the job is finished the results are often disappointing. Referring especially to Huntingdonshire schools, he says it is astonishing how little importance has been attached in the past either to their surroundings or aspect. Buildings have been made merely to fit in with the shape of the piece of ground, so long as they presented a symmetrical appearance to the eye. No attention has been paid to whether the classrooms faced north, south, east, or west, and no attempt has been made to keep the buildings well back and away from the road, with its accompaniments of noise and dust. Dr. Moss-Blundell adds: "It is rare to see a tree in a playground unless the tree happened to be there before the school. What could be more desirable than a row of lime trees to freshen the air and shade the playground in the summer? Since it is impossible either to change the position or aspect of the older buildings, let us hope that in the future the accumulated knowledge at our disposal may be utilised when new buildings are being planned. Schools in the past were the work of the architect alone. In the future they will have to satisfy the requirements of the teacher and the sanitarian as well."

SOCIETIES AND INSTITUTIONS.

R.I.B.A.

At the opening meeting of the Royal Institute of British Architects, held on November 4th, when Professor Blomfield delivered his presidential address (printed in our issue for last week), it was announced that M. Stanislas Louis Bernier, President of the Société Centrale des Architectes Français, had been nominated for election as Honorary Corresponding Member. It was also announced that the Hampshire and Isle of Wight Association of Architects had been admitted to alliance with the Royal Institute.

The Earl of Plymouth, proposing a vote of thanks to Professor Blomfield, made a statement with respect to the Bill for the Preservation of Ancient Monuments, now before Parliament. He said that although there were laws in existence which had specific reference to this matter, they were very limited. In the enactment of further legislation it would, of course, be advisable to consult the practice of other European nations, but care should be observed in taking a guide to ourselves. The policy of placing the power with Government departments or special committees had so far been very successful throughout the large European countries. The Government, he believed, were approaching the question with great care, and were endeavouring to constitute some organisation which would in the first place assist those who at present had the care of ancient monuments in getting expert advice. One of the greatest difficulties by which they were confronted was the setting up of an advisory board, which should have the complete confidence of the country, and whose decisions would carry the assent of those who had undertaken the preservation

of old buildings. Although representatives of archaeological societies, and artistic bodies, would probably belong to the advisory board, it was the architects from whom advice would be taken in the preservation of ancient monuments; and to the Institute especially they would finally have to turn for external guidance as to how such buildings should be treated.

Sir Aston Webb, R.A., seconding the motion, said they knew Professor Blomfield not only as a distinguished architect but as a man of great literary gifts and the possessor of a high university degree. What would probably appeal more strongly to the younger members was that he was also a good all-round sportsman. When the Royal Academy students played their annual match at Lord's they always made a point of securing Professor Blomfield on their side; and at the last match he scored a hundred runs off his own bat. He was also an excellent rider to hounds, and more than once he had alighted on his head without doing any material damage—which proved that his head was all right. At tennis and billiards he was likewise an accomplished player. A many-sided man, he would be described in technical language as a polygonal president. He (Sir Aston) regarded Professor Blomfield as a symbol of reconciliation; but it was a strange nemesis that one of his first official duties should be the formation of some scheme of Registration. They were all determined to form some such scheme, and so put an end to the protracted business of which they were all getting heartily tired. The president apparently looked upon education as the most important thing he had to deal with. They all knew, of course, that Professor Blomfield had helped very largely to mould the system of education which had now been adopted. He had also adumbrated a Diploma course, which he (the speaker) hoped would be accomplished before Professor Blomfield's term of office expired. Mention of the Royal Academy had been made in the address, and he would say that if that body were approached it would accord to the Institute a sympathetic hearing. Sir Aston concluded with an appeal for more subscribers to the Architects' Benevolent Society.

Professor Blomfield having briefly replied, drew attention to a fine collection of architectural drawings exhibited on the walls. These, he said, had been the property of the Institute since 1838, having been given by Sir James Drummond Stewart through Sir Charles Barry.

INSTITUTION OF CIVIL ENGINEERS.

Public Works at Home and Abroad.

In the course of his recent presidential address to the Institution of Civil Engineers, Mr. R. Elliott-Cooper said there was one main difference between the methods of construction of public works at home and abroad which affected materially the qualifications of the engineer in charge of them. In this country it was to a great extent customary for the carrying out of the works to be placed in the hands of an experienced contractor, according to the designs and under the supervision of the engineer, but in Australia, South Africa, and the Crown Colonies the work of construction was generally carried out "departmentally"—that was, without the intervention of a contractor. In Canada, however, the plan of carrying out the work through a contractor was more generally adopted, where, in the case of bridge construction, contractors often submitted de-

signs for the work which they tendered for, in this respect following the United States practice. There were many advocates for each of these methods, even to the extent of the rival systems becoming plants of political parties. In many cases, however, there was no choice when contractors possessing the requisite skill and capital were not available, and it often became necessary for the Government to provide these essentials, including plant and material. The engineer, therefore, in direct charge of works, who at home would be called on to exercise the ordinary functions of a scientific and practical designer and inspecting civil engineer, had in the case of similar work abroad to add to them the commercial ability and the qualifications of a successful organiser who were required by the contractor's agent.

LEGAL.

A "Measured-Rate" Contract.

In the High Court of Justice last week before Mr. Justice Bailhache, the case of *Holland and Hannen and others v. Decies* was heard. This was an action in which Messrs. Holland, Hannen, and Cubitt, builders, of Gray's Inn Road, claimed a balance of about £6,000 from Lord Decies for work done to his residence, Sefton Park, Slough. Mr. Leslie Scott, K.C. (for the plaintiffs) said the claim was on a contract on what was known as the "measured rate" basis, to carry out very extensive alterations and ornamental work at Sefton Park. The work had to be done at a very rapid pace, as Lord Decies was going to America to be married, and was anxious to have the house ready as soon as possible after his return. It was possible to enter into a formal contract, and the work was arranged to be done on the basis of an agreed schedule of prices in the various trades involved, and a contract was made that the plaintiffs would carry out whatever work was ordered in accordance with the schedule of prices. At the time the instructions were received to begin the work the architect himself hardly knew what the work was going to be, and it grew and grew. Time was everything, money was no object, the best work had to be put in, and it was carried on continuously day and night. The net result was a big bill, and no specific objections were made to it for many months, but various defences had now been set up. It was alleged that the prices were not fair market prices. The plaintiffs said they were. It was also contended that it was represented that the work would not exceed £8,000 to £10,000; as a matter of fact it was nearly £20,000. The difference was due to the very much increased work on the old house and the structural condition of it, and to a very large addition for ornamental work which amounted to £7,000. The work had been done, there was no fault suggested, and Lord Decies had the benefit of the contract. It was further said that some of the work was ordered by the architect without the authority of Lord Decies. There had been payments on account of £13,000, and plaintiffs now claimed a balance of £6,000 odd. The defence set up a claim for £5,000 for damages for alleged bad work. Lord Decies also said that the work, which his own architect and surveyor said was worth £19,000 to £20,000, was worth only £6,000, and that he had overpaid £7,000. The total actual profit to the plaintiffs was $7\frac{1}{4}$ per cent. on the whole; counsel knew of cases where the profit ran from 10 per cent. to 15 per cent. An order had been made; only the

question of liability was to be tried. It was originally agreed between the parties with regard to the £13,000 paid that there could be no dispute, but Lord Decies now interclaimed sums aggregating £13,000 on various grounds.

Evidence was given for the plaintiffs by Mr. Horace Farquharson, architect.

Mr. Justice Bailhache said the extra work was, in his opinion, done under the contract, the construction of which was very difficult, but he thought, on the whole, that it gave a power to agree prices after the work was done, and that the defendant was bound by the prices in the schedule and prices to be deduced therefrom. He therefore gave judgment for the plaintiffs with costs of the action, but the precise amount would need to be determined by arbitration after the defendant had delivered particulars of the alleged overcharges.

Liability for Goods Supplied by Sub-Contractors.

The case of Ramsden and Carr v. Chessum and Sons and Ward was heard by the Court of Appeal on November 5th, before Lords Justices Vaughan Williams, Buckley, and Kennedy. Chessum and Sons appealed from a decision of Mr. Justice Hamilton's, and there was also a cross notice of appeal by plaintiffs.

In 1909 J. Chessum and Sons became contractors for the erection of a picture theatre in Oxford Street. Ramsden and Carr are designers and makers of door-handles and door furniture. Mr. M. S. Ward was the architect for the building owners, and he, it was stated, accepted plaintiffs' quotations for door furniture to the value of £118, and other goods were supplied, the total value being £142 13s. The architect, in September, 1910, certified for payment of £1,500 on the general contract, and it was contended that this amount included the £142 13s. claimed by the plaintiffs, and that the architect had in fact acted as the agent of the defendant firm. The plaintiffs sued for the price of goods sold and delivered, or alternatively for money had and received to their use, or sold in trust for them. The builders denied that it was their duty to supply the door-handles, and denied that the defendant Ward was their agent. In the court of first instance, Mr. Justice Hamilton held that the architect had not acted as agent for the builders, that plaintiffs had no claim for money had and received, and that the fact that the goods were delivered to and used by the builders raised an implied promise that the builders would pay for them. From this decision the builders now appealed.

In delivering judgment, Lord Justice Vaughan Williams observed that he was not prepared to say that Ward had made no contract on behalf of the building owner; yet neither was he prepared to say that defendants' use of the goods implied a promise to pay for them. The architect had power to order goods outside the contract, and there was nothing by way of price or otherwise giving the defendants the information that these goods had been ordered on their behalf. For a long time the builders had had no intimation of the name of the plaintiffs or of the subject-matter of the goods, and there was nothing to show whether they were goods falling within the prices set out in the specification. It had been said that it was the duty of the defendants to ask for the information when they saw the goods, and to avail themselves of the right to make sub-contracts; but his lordship thought it was the duty of the architect to give the name, the

price of the goods, and the terms to the contractors. In his judgment the inference of an implied contract to pay ought not to be drawn here, and he was also in doubt whether these goods were included in the certificates at all.

Lord Justice Buckley agreed that the architect was not the builders' agent. The architect was essentially in a position adverse to the builders; he was there to give orders to them. Also there was here no question of trust, because the builders had not been paid for specific items. What they would have received would be a lump sum, at a time when the amount of the plaintiffs' claim was unknown. Therefore the cross appeal failed. With regard to the appeal, it was familiar law that if goods were delivered to a person and used by him so that he got the benefit there was an implied promise to pay for them. But it was necessary that there should have been a delivery to that person and a user by him of the goods for his benefit. The goods which had been delivered here were not such as were contemplated by the contract. Ward had ordered them, and they were delivered in July. The question then was, to whom had they been delivered? The goods were simply sent to a place—namely, the auditorium of the theatre. It had not been made out that there was any delivery to the defendants; and the invoice for them was sent to Ward. The defendants did not use the goods for the purposes of their contract with a consequent liability to pay; neither had they had the benefit in the sense of being paid for them. For all these reasons he thought that the appeal should be allowed.

Lord Justice Kennedy dissented. He thought it was settled law that a person who received goods and used them, knowing who had supplied them, and that the supplier was the seller and not the giver, must pay for them. There was a clear power in the contract to vary, and the variation which had been made did not affect the liability. He thought that the appeal should be dismissed, but he agreed with the other members of the Court that the cross-appeal must fail.

The Court allowed the appeal (Lord Justice Kennedy dissenting), and dismissed the cross-appeal.

THE CONSTRUCTION OF HARD TENNIS COURTS.

Enquiries respecting the construction of hard tennis courts having frequently reached us, we think it of interest to give the following particulars from an article on the subject that recently appeared in "The Times":

The ideal court should be restful for the eye, easy to the feet, and responsive to the "work" or pace on the ball. It should be level. Play should be possible on it all the year round—that is to say, it should never need "resting"; it should recover from rain in a few minutes, never crumble or become dusty in hot weather, and remain unaffected by frost or thaw. It should require the minimum of attention and should be cheap. It should neither discolour the balls nor tear them to pieces. And finally, it should be constructed of a material that will "bind."

No exact information can be given as to the cost of laying a hard court; it will vary with the number of courts required, with the price of labour, with the amount of levelling and excavation to be done, and other factors. But, roughly, it may be said that the British Hard Court Co.'s sand court costs about £100, Messrs. H.

Todd and Co.'s granite concrete court £120 to £150, and the En-tout-cas rubble court £75. An asphalt court would cost not less than £80, but a gravel court might be had for £40.

The preliminary stages of the constructive process are much the same for all courts. The ground has first to be levelled, and then, as a rule, comes at least 6 in. of excavation. Where the surface is to be porous the system of drainage has now to be decided on, and when the drain pipes—if any—have been laid and precautions against settlement have been taken, the next step is to extirpate weeds, etc. Then comes the actual building of the court. The sand courts consist of three layers—one of fine ashes, one of fine brick, and finally one of sand. The concrete of the concrete court is superimposed on a deep layer of rubble. The art of construction consists in binding the layers together, and is acquired not out of books, but by making courts. And here some mention must be made of the En-tout-cas court. In the ordinary rubble court the material, a form of clay, is "ballast burn"; part of it is caught by the wind and becomes hard; part is sheltered and remains soft. When laid the unburnt portion soon returns to its original condition; it sinks, discolours the balls, and loses its porous quality. The problem, then, was to find a porous clay; to reduce it to an even hardness in the kilns; to burn it beyond the stage where it would "weather back" and short of the stage where it would cease to bind owing to vitrification. This problem the En-tout-cas Co. appear to have solved, and their specially treated clay, spread in two layers over a bed of ashes, is said to give the ball the bound of grass. The court when completed is of a deep red even colour which does not stain the ball, it drains quickly, it can be laid without a slant, and it does not tire the feet. It is not claimed for this court that it can be played on in frosty weather, and it is admitted that it requires plenty of water. Indeed, a deliquescent chemical is provided to save the labour of watering.

Concrete and asphalt courts are to be recommended where much hard usage is expected—at schools, for instance. Gravel is cheaper, but is sometimes so coarse in texture that the material displaced by the players as they run forms ridges large enough to affect the bounce of the ball.

Sand courts are good or bad, according as the surface can be made to bind. Some varieties of sand are gritty, and it is not every one who likes the colour.

Cinder courts are cheap and easy to make, but they injure the gut of rackets, and what with brushing and what with watering these courts require much attention. Concrete and asphalt courts escape this objection at the cost of being expensive to repair when they crack and of being harder to the feet than the makers admit.

To sum up, any hard court constructed by a reputable firm should give the purchaser many hours' play on a true surface at seasons when grass courts are useless. But the purchaser should play on the type of court he contemplates ordering before signing his contract—especially if incompatible virtues are claimed for it.

OBITUARY.

Mr. Thomas Chamberlen.

Mr. Thomas Chamberlen, of Hammer-smith, builder (of the firm of Messrs. Chamberlen Brothers), who died on August 12th last, aged seventy, left estate which has been proved at £12,204 gross.

ENQUIRIES ANSWERED.

Stains in Polished Panelling.

N. T. S. writes: "A room in an old country house is panelled with oak, which was originally painted. About four years ago the paint was removed and the paneling was polished. Parts of the panelling have now gone 'milky' under the polish, and it really looks as though the paint had not been properly removed; but this can hardly be the case, as the stain has only recently appeared, and the wax polish has not been touched. Although situated over a damp cellar, the room and paneling appear to be dry, and there is ventilation at the back. Can you account for this staining and give a remedy?"

—The trouble has apparently arisen from a moist air caused by damp, but if the old paint was stripped with an alkali paint remover and the usual wash of dilute vinegar afterwards given, it is very likely that the wax polishing was done before the oak was thoroughly dry, and this would also account for the "milky" appearance. The only cure is to remove all the polish down to the wood with a paint-remover free from alkali—i.e., one made principally from acetone, such as "Pintoff," "Pyrol," etc. These may be used without its being necessary to apply any acid after the polish is removed, the surface being simply wiped down with a piece of waste dipped in turpentine or white spirit. Care should be taken before repolishing to see that the surface is bone-dry, or otherwise the trouble is likely to recur. A. S. J.

Appointments in India.

"Anxious" writes: "Kindly say to whom I should apply regarding appointments to be had in India under the Public Works Board."

—Government appointments of the kind you mention are usually made by the head of the Department concerned, so you had better communicate with the India Office, Whitehall, London, S.W. Alternatively, you would probably be able to obtain information from the Civil Service Commissioners, Burlington Gardens, London, W.

Surveyor's Fees and the London Building Acts.

L. B. A. writes: "Clients of mine, having received a sealed notice from the L.C.C. calling upon them under Section 9 (1) of the above Act to do certain works so as to provide additional means of escape in case of fire, submit to the Council alternative proposals for the provision of escape, which proposals, with some further modifications and additions, receive the sanction of the Council, and the work is carried out. After the works are completed, my clients receive an account from the District Surveyor for fees due to him under the Act of 1894 in reference to the aforesaid works amounting to nearly £30, with a further intimation that an account for the fees due under the 1905 Act will follow."

"I shall be glad to receive an opinion as to the right of the Surveyor to make this charge. I myself am of opinion that, inasmuch as the whole of the works carried out were works done solely under the 1905 Act, Section 9, no fees are payable to the Surveyor under the 1894 Act. This contention is very clearly borne out by the wording of the eighteenth section of the 1905 Act, (1) and (3)."

—The 1905 Act is an Act amending that

of 1894, and must be read in conjunction therewith. In some respects it is not quite so clear as it might be, but it appears to me to be quite certain that only one set of fees is payable to the District Surveyor. I advise you to do nothing until the further demand reaches you, as it is quite possible that the first may be withdrawn. F. S. I.

Question of Seating Accommodation.

BLAIR writes: "A contractor agreed to erect a village hall specified to accommodate approximately 300 persons. His contract was to include the seating, and he supplied twenty-four seats 12 ft. long and two seats 10 ft. 6 in. long—in all 309 ft. of seating. Is this sufficient, or should more seats be supplied?"

—The seating allowance is very inadequate, and, if it is certain that the agreement clearly specifies seating for 300 persons, will have to be increased. It is usual to reckon 20 in. length of seat per person, so that the seating provided accommodates about 180 persons. At least 500 ft. of seating is requisite, and it is to be hoped that the building is not devised on too small a scale to hold it. G.

Carey's Roofing.

B. writes: "Kindly give the address of the maker of Carey's roofing."

—We are unable to trace this material. Is it not possible that a clerical error has been made? Graves's patent roofing may be required. If so the address is 14, Water Street, Liverpool. This roofing is stated to resist fumes, gases, acids, and vapours, and to be weather-proof, rot-proof, and fire-proof (insurable at the same rate as slates). G.

An Absurd By-law.

CORRESPONDENT writes: "A rural district by-law with regard to sleeping rooms in houses runs as follows: 'If such room is intended to be used as a sleeping room and is an attic or a room wholly or partly in the roof of such building, such room shall be constructed so that it shall be not less in any part than five feet in height and so that it shall to the extent of two-thirds of the superficial area of the floor be of a height of not less than nine feet.'"

"Am I bound to abide by this extravagant by-law, or have I any means of avoiding it? It will add considerably to the cost and nothing to the comfort or healthiness of the house in question."

—The by-law quoted is that usually adopted in sanitary districts all over the country, and is, I believe, based upon the model by-laws of the Local Government Board. I have several times known it to be evaded by builders, but never to have been relaxed by the local sanitary authority. F. S. I.

Lowest Tender Passed Over.

AERO writes: "I have been told that, in the event of certain contractors being invited to tender for work, it is illegal to pass over the lowest tender and accept a higher one. Is this so?"

—Probably what is meant is a reference to a case of which the writer remembers hearing many years ago, where tenders were invited which did not provide what since then has been a usual clause, to the effect that the enquirer does not bind him-

self to accept the lowest or any tender, and which led to an action on the part of the lowest tenderer who had been passed over. The writer's recollection is that the action was successful, but in Roscoe's "Digest of Building Cases" it is stated that: "A person who invites, by writing or word of mouth, tenders for work or for the purchase of anything, does not by so doing impliedly promise to accept the lowest or the highest offer or to accept any one of such tenders. The notice to persons willing to tender is a mere promise that he who issues the notice is willing to receive and to consider offers. If anything, say in the notice for tender for a building, could be construed as showing an undertaking to accept, say, the lowest offer, then there would be an exception to the above general rule."

Probably in the cases referred to the notice could be construed into an undertaking to accept. A. G. W.

Books on the Empire Style in France and Percier and Fontaine.

L. E. W. (Purley) writes: "Kindly name a book on the Empire Style in France and also a good biography of Percier and Fontaine."

—"Le Style Empire," 8vo, cloth. Containing 132 illustrations. 3s. 6d. net, postage 3d. "Percier et Fontaine." Biographie Critique par Maurice Fouché. Containing twenty-five illustrations of their works, from photos and drawings. 3s. net, postage 3d. These books may be obtained from Mr. B. T. Batsford, 94 High Holborn, W.C.

Strains in Reinforced-Concrete Jetties.

CORRESPONDENT writes: "In connection with the design of reinforced-concrete pile jetties, kindly say whether anything has been published as to the determination of the strains induced by the impact of vessels when berthing, apart from the ordinary superimposed loads. This question involves the important factor in the design as to whether the continuity and consequent rigidity of such reinforced work should not be modified to give sufficient resilience to those parts where the impact may be localised to avoid transmission of such excessive strains throughout the structure. Several failures have occurred through the apparent overlooking of this point. The usual Board of Trade registered particulars of the vessels can be obtained, and the maximum speed and angle of approach at impact can be approximately assumed, but the equivalent transverse live load is difficult to determine."

—We do not know of any published information on this subject. The problem is generally determined from results of experience with similar structures, and it is therefore obvious that a merely theoretical calculation would be hardly of any use. As you say, the speed and angle of approach could be assumed, but the effect of fender piles in deadening the blow, the number of fender piles acting, and the action of the deck or decks in transmitting the load over a number of the piles is indeterminate, and the assumptions made in this respect would depend on the special conditions of each work and the personal judgment of the engineer familiar with those conditions. A reinforced-concrete pier or jetty seems to possess the advantages that it is not so rigid as to injure a ship badly if there is an accident, and is yet sufficiently rigid to withstand rough usage. D.

Some recent work carried out by the Societies of the Temple upon the western porch of the Round Church of the Templars has resulted in the disclosure of some very beautiful original stone carving, the existence of which was not generally known. The semi-circular arched doorway, in form and shape a

beautiful specimen of the Transition Norman style, appeared to any observer to be made of a white crumbling stone much defaced by accumulated dirt and in parts crumbling away. In the course of carrying out some work for the preservation of the entire porch the authorities of the Societies of the Temple, who were in charge of the work, called in the assistance of Mr. W. D. Caröe, F.R.I.B.A., under whose direction, by means of the application of a chemical preparation, it was discovered that the white and black substance of which the archway appeared to be made was a thick coating which at some time or other had been put on to the original stonework of the porch and defaced its beauty. With care and skill all this substance has been cleared away, and has revealed original stone carving of great beauty and of the same date as that of the building of the Round Church. The result is that visitors to the church are able now to see not only a most beautiful specimen of early stone carving, but the archway of the porch almost in form, colour, and decoration as it was in the days of the Knights Templars.

Mediæval Gothic Art.

In the first of a series of University Extension lectures on "Five Centuries of Decorative Art" (1050—1550), given recently by Mr. S. C. Kaines Smith in the lecture theatre at the Victoria and Albert Museum, it was explained that the minor arts of Mediæval England are too often overshadowed by the great art of architecture, which, indeed, set the pace and guided the development of all other arts. There is, too, a widespread belief that "Gothic stiffness" made free and realistic sculpture and painting an impossibility. While it is true that the primarily decorative character of most mediæval art did produce this result in some degree, the fact remains that Gothic art was, within its limits, as free and as high in its ideals as the art of any other age, and was no less intimately bound up with the life of its producers than was the art of the ancient world of the life of Greece and Rome.

The New Irish School of Architecture.

In the theatre of the Royal Dublin Society the Royal Institute of the Architects of Ireland recently held a meeting to explain the objects of the new school of architecture which is being established in the University of Dublin. There was a large and representative assembly, including the Lord Lieutenant of Ireland. The president of the Royal Institute of Architects of Ireland (Mr. Albert E. Murray, F.R.I.B.A., R.H.A.), who took the chair, said, in outlining the history of architectural education in the United Kingdom, that the first university to recognise architecture by establishing a Chair and granting degrees was that of Liverpool, in 1899. London University followed this courageous example; and now the Royal Institute of the Architects of Ireland had persuaded the authorities of the University of Dublin—the National University—to entertain the project of founding a similar Chair. Irish architects are now, therefore, in a fair way towards university direction and recognition of their studies. The scheme, briefly stated, is that the student, having matriculated in ordinary educational subjects, can enter the Faculty of Architecture. He will spend three years in the university studying for his profession, sitting for an examination at the end of each year. At the end of the three years he must spend two years in an architect's office.

TRADE AND CRAFT.

"The Right and Wrong of Restoration."

Messrs. Kerner-Greenwood and Co., King's Lynn, write to us as follows:

"In your issue of September 18th there is an article on 'The Right and Wrong of Restoration.' The writer mentions a method of making a cement face more artistic by brushing the face to take away the stiff appearance of modern pointing, besides preventing the joints from drying too black on new work and too white on old. Those who have seen examples of this know how fine a finish it is to ashlar, rubble, or brick walling, and how much it is in keeping with the old weathered surface which is so easily spoilt by unsympathetic handling." This is a point upon which many architects have written to us. They all recognise that cement makes the most durable method of pointing a wall, but many of them, especially those engaged in restoration, think, and think rightly, that the appearance of cement is too metallic for artistic work. Architects will therefore be pleased to learn that Pudlo can be used with lime mortar, thus making the mortar waterproof and frost-resistant. Of course, this material is essentially used for making cement waterproof, but at the same time it has the advantage of making lime mortar waterproof. Except in special cases, such as restoration, it would not be economical to use lime, and we ourselves recommend cement whenever possible. Some of the most ancient buildings in this country have been restored in Pudloed lime mortar. We should be pleased to give a reference to any architect who may apply to us."

Warmin^g and Ventilating Installations.

Messrs. E. H. Shorland and Brother, warming and ventilating engineers, Failsworth, Manchester, report recent installations of their specialities—exhaust roof, and other ventilators, patent Manchester stoves and grates, etc.—in the following buildings:

Festiniog Urban District Council Assembly Rooms; Spittlesea Hospital, Luton; Milford Haven Catholic Schools; Extensions to the Grammar School, Brigg; Llanyre Hall, Llandrindod Wells; St. Paul's Schools and Institute, Newport, Mon.; and the Church National Schools, Beccles.

The Cure of Downdraught.

In an illustrated booklet entitled "Downdraught and its Cure," Messrs. J. H. Sankey and Son, Ltd., Essex Wharf, Canning Town, E., show that many cases of so-called downdraught are due to faultily constructed flues; to chimneys not kept clear of soot; and to the fronts of fireplaces being too expansive. Real downdraught is of external origin and may be caused by adjacent structures by which the wind is beaten down, by tall trees that produce a similar effect, or by eddies and gusts of wind. It is to real cases that Sankey's downdraught preventive pot is applied as a remedy. It is provided with a series of louvre openings, so disposed one above another that the wind blowing against the pot from any quarter is caught and deflected or dispersed, and has no chance of getting down the chimney in anything like sufficient quantity to cause the annoyance that is experienced when downdraught is unintercepted. The pot not only prevents downdraught, but promotes updraught. The wind, as it strikes the pot, rushes up the louvre openings and forces the smoke out of the pot,

while on the opposite side it is drawn as well. The pot, which is made selected clays, in red, buff, and salt-glaze is not only simple in construction pleasing in design.

COMING EVENTS.

Wednesday, November 13.

Northern Architectural Association.—Presidential Address by Mr. W. Milburn, F.R.I.B.A.
Manchester Society of Architects.—Presidential Address by Mr. J. H. Worthington, M.A.R.I.B.A.
Edinburgh Architectural Association.—Mr. A. Lorne Campbell, F.R.I.B.A. on "Town Planning" (Association Paper).

Thursday, November 14.

Sheffield Society of Architects and Surveyors.—Mr. F. H. Wren A.M.I.C.E., on "Some Notes on Surveying."
Concrete Institute.—Presidential Address by Mr. E. P. Wells, at 7.30 p.m.
Society of Architects.—Presidential Address by Mr. Percy B. Tulloh, F.R.I.B.A., at 8 p.m.

Friday, November 15.

Birmingham Architectural Association.—Mr. F. Dare Clapham, F.R.I.B.A. on "Some Notes on Lancaster Town Hall."

Saturday, November 16.

Edinburgh Architectural Association.—Visits to works of Messrs. Redpath Brown and Co., New Masonic Hall, and new hall of the United Free Church of Scotland.

Monday, November 18.

Royal Institute of British Architects.—Mr. J. L. Ball on "Bath and Wells" at 8 p.m.
Liverpool Architectural Society.—Mr. J. A. Gotch, F.R.I.B.A., on "Original Drawings for the Palace of Whitehall, attributed to Inigo Jones."
Institute of Sanitary Engineers.—Mr. van Putten, M.Inst.C.E., on "Intercepting Traps in House Drains," at 8 p.m.

Thursday, November 21.

Architectural Association.—Conversation at 8 p.m.
Leeds and Yorkshire Architectural Society.—Presidential Address by Albert E. Kirk, A.R.I.B.A.

Monday, November 25.

Architectural Association.—Mr. Horatio Cubitt, A.R.I.B.A., P.A.S.I., on "Prosaic in Architecture," at 8 p.m.
Wednesday, November 27.

Edinburgh Architectural Association.—Demonstration in ironwork by Thomas Hadden. (Associates' Meeting).

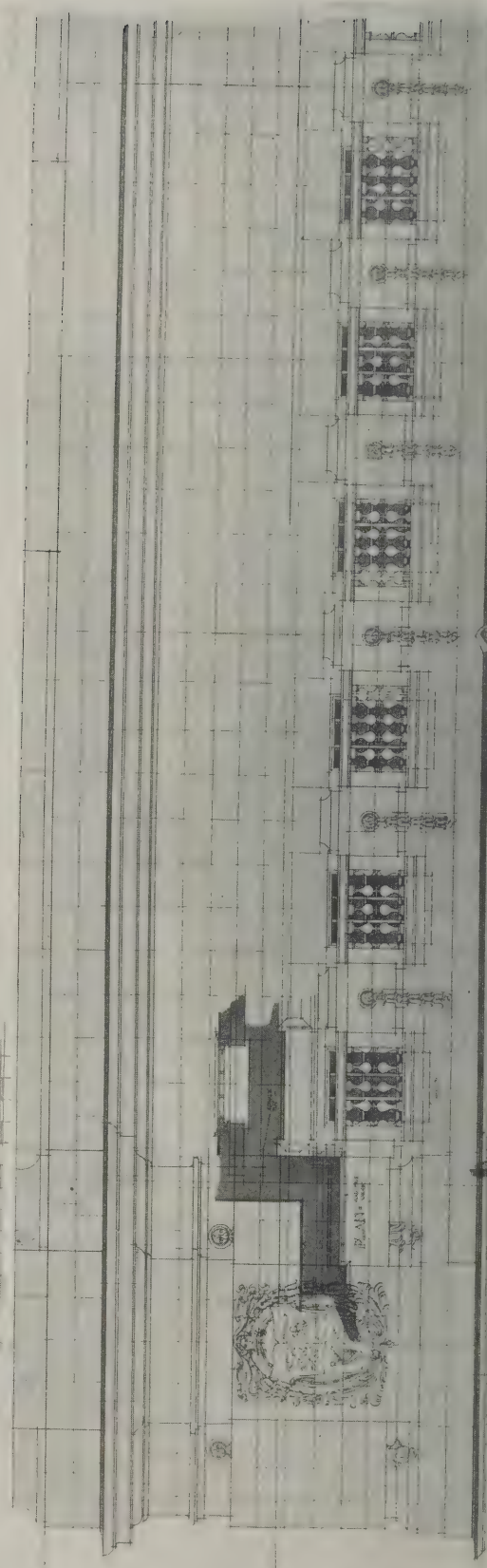
Institution of Municipal Engineers.—Mr. W. Valentine Ball, M.A., Barrister at Law, on "The Effect of Recent Decisions under the Arbitration Clause," Southampton Row, W.C., at 8 p.m.

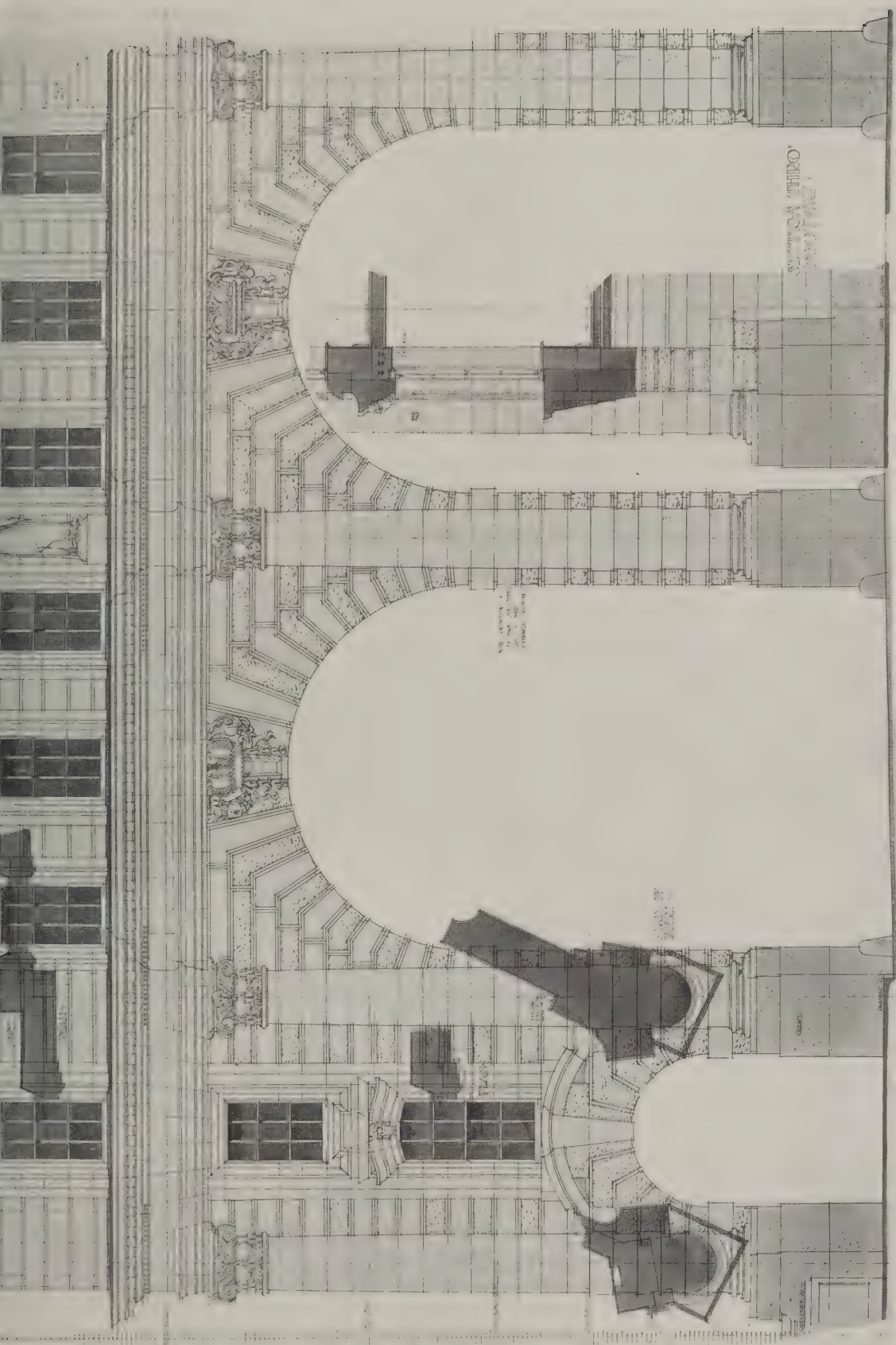
Thursday, November 28.

Sheffield Society of Architects and Surveyors.—Mr. J. C. P. Toothill on "Visit to Bath." (Students' Meeting).
Concrete Institute.—Mr. John M. Thibald, F.S.I., on "Bills of Quantities for Reinforced Concrete Work," at 7.30 p.m.
Architectural Association (Cambridge Sketch and Debate Club).—Exhibition of Sketches.



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WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS. IV.—THE ADMIRALTY BUILDING, SPRING GARDENS, LONDON.

SIR ASTON WEBB, C.B., C.V.O., R.A., ARCHITECT.

THE
ARCHITECTS' & BUILDERS'
JOURNAL.

Wednesday, November 20th, 1912.

Volume XXXVI. No. 931.



CONSTANTINOPLE.



SHOP WINDOWS, RUE ST. HONORÉ, PARIS. A. SAUFFROY, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

NOVEMBER 20th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 931.

The Progress of the Town Planning Act.

REPORT has just been issued by the Local Government Board showing the progress made with the Town Planning Act of 1909. If we are to judge from the number of local authorities who have put the Act into operation we may safely say that the pessimists, who at its birth predicted it would die suffocated by its own weight and the complication of its provisions, have been wrong; and it is always a pleasure to find pessimists at fault. A large number of important schemes have been launched and are in various stages of growth.

The most advanced of any of the corporations who are taking up the subject is Birmingham, in whose district two large areas—one of 2,320 acres and another of 142 acres—have been planned out and the schemes submitted to the Local Government Board for approval. But many other corporations are nearly as advanced, having made application and been granted authority to prepare schemes. Bournemouth, Halifax, Sheffield, Southport, and Ruislip-Northwood figure prominently among these latter; and in connection with Ruislip (where 5,906 acres are concerned) it will be remembered a large competition was held last year. Other applications before the Board include Wirral (829 acres), Luton (4,345 acres), and Sutton Coldfield (4,400 acres), the last being the most extensive proposal yet put forward. And there are more than 100 other local authorities who are directly taking up the development of areas under their jurisdiction. Hence, there can be little doubt that the provisions of the Act are being widely adopted.

If, however, we look below the surface and do not content ourselves, like the Local Government Board, with the mere enumeration of the schemes in progress, we shall not find the condition of things so satisfactory. The plans put forward are in many cases crude in the extreme, and the most valuable clauses in the Act, which give power to the promoters not only to limit the number of houses to the acre, but to determine their character, are neglected. We have a great corporation like Birmingham proposing schemes in which the natural features of the landscape are to a large extent ignored and main roads planned regardless of contours, with the result that in many cases the property on either side of the proposed road has to face what is practically a railway embankment. The reason for this kind of thing, which is marring so much of the work done under the Act, is to be found, we firmly believe, in the failure of municipal and urban authorities to consult architects in the preparation of their schemes. Occasionally an architect is co-opted on to an advisory committee, which rarely meets, or, if it does, meets too late to alter the scheme, though it is at the very commencement that the architect's advice is of the most value. We only know of one case—Woolton, in the county of Lancashire—where an architect has been definitely called in by the local authority to prepare the actual plan, and yet a moment's thought would show those who are not already convinced of it

that the making of the plan is in essence an architectural matter.

The problem before the town planner is a very complicated one, but it is of essentially the same nature as the problem before the architect when he sets out to design a building. The town planner, like the architect, must be able to form a clear mental picture of the result he wishes to bring about. He must grasp from a sociological point of view the requirements of the district he is to plan and their relation to the town as a whole, and with these requirements he must weld the natural features of the landscape so that each may help and enhance the other. To understand these requirements he must make a long and sympathetic study of the town he is courageous enough to advise, but study and knowledge of the facts of the problems alone will be useless unless to those facts the town planner brings a trained imagination. He must be able to see his design in three dimensions, and not merely as a plan. Unless he can do this and form a definite mental vision of the town as he would wish it to be it is impossible for him to give it any expression or character. The sites he will provide must be determined by the buildings he wishes to see on them, or the whole affair is once again chaos. Therefore, the problem is an architectural one, though of a very advanced order, and we may be sure that it is in this way that the public will ultimately judge it. Paper plans of roads unconnected with buildings are not things the public interests itself in. When, however, it sees the new suburb built it will form its opinion, and its opinion will be determined by the actual buildings and their grouping.

If, then, town planning is advanced architecture it is work which not only requires the finest architectural talent, but work which architects alone can do. Up to the present, however, with the exception noted above, practically all public town planning work is being designed and carried out by municipal engineers. Now architects as a whole cannot be accused of looking down on or misunderstanding the engineer's position or his work. Rather is the reverse the case. Conscious of their own infirmities, they look up to the man who so directly achieves his end. There is even a school of architects who profess to see salvation for their art in the methods of the engineer. No one with any æsthetic sense, much less an architect, denies to the engineer the sheer beauty of a great deal of his work, although that beauty may be obtained, and probably often is obtained, in perfect unconsciousness of its existence. The fitness for its particular purpose and the directness with which that purpose is attained are obvious qualities of good engineering work. It is, however, just this directness of treatment that the engineer brings to bear on his work which unfits him for the larger and more elusive problems of town planning. The problems he can solve so successfully are the problems which can be reduced to the terms of mathematics, and the making of a town plan is not one of these. His proper sphere in this connection, and it is a highly important one, is the solving and

carrying out of particular problems after the artist—the man of trained imagination—has conceived the general scheme.

A couple of years ago the Royal Institute seemed to realise the important—the supreme—part architects might play in town planning. It organised and spent several thousand pounds upon a great exhibition, which first showed to the public the possibilities of the problem. But in so doing it made the tactical mistake of putting forward the rightful claims of the architect a little too vigorously, or, at any rate, a little prematurely. The result was, not that the architects got the work they alone were fitted to do, but that the municipal engineers were frightened by the claims made. These latter met in London soon after the exhibition and solemnly declared that town planning was their province—in the first instance, and only in a very secondary way that of the architect, and being in a position to put their views before their councils the result to-day is that they hold the field, with the consequences we have seen. Bred in by-laws and the difficulties of drainage, it is impossible for the average municipal engineer to bring to the problem that broad outlook and imaginative sympathy which it requires. Even the best of them carries into the country great town roads shod and curbed in granite, relentlessly trampling under foot the softer beauties of nature, and regardless of the junctions of smaller roads or building sites. Under such conditions the new town planning is likely to be worse than the old muddles. These by accident produced occasional picturesqueness of effect. The new method by a little forethought but much power will produce nothing but dreary monotonous disaster. If Mr. Burns wishes to save his Act, not from neglect but from abuse, he must save it from the hands of his friends the engineers.

C. H. R.

The Society and the Institute.

IT would be a great gain in power if some means could be devised for the fusion of the Society of Architects with the Royal Institute, for the profession would then present a united front that would certainly command an increased attention on the part of governing bodies throughout the Kingdom, and also, by its numerical increase, the status of the profession would be raised in the eyes of the public. It was with regret, therefore, that we witnessed the collapse of the proposals which seemed so near realisation two years ago. Since then the Committee of the Institute has had the matter under further consideration, though, as a fact, we fear the proposals have been shelved. And we can see no better hope in the schemes which the Society has now decided to embark upon, references to which were made by the new president, Mr. Percy B. Tubbs, in his inaugural address to the Society last week (as reported elsewhere in this issue). The main scheme still is, of course, Registration. We have already expressed the opinion that the Society is ill-advised in pushing on to present a Bill by itself in the present session of Parliament, and Mr. Tubbs's remarks offer no good reasons for us to alter our opinion. As Mr. Tubbs admits, the negotiations between the Society and the Institute have not been officially broken off, but it appears that, two years having elapsed without the Institute making any definite advance towards a Bill, the Society considers it useless to wait any longer, and so has decided to go forward alone. As to what attitude the Institute will take up towards the Bill which the Society intends to submit to Parliament there is no indication to show, but, in view of the fact that the Institute is now pledged to Registration in one form or another, Mr. Tubbs does not see how it can consistently oppose the Society's measure, nor, if it did, what it could gain by doing so. Our own view is that the Institute will not do anything in the matter at all, but that when the Bill is presented it will not be passed for the simple reason that the

main body representing architects in this country not giving it their support. We certainly do think, however, that it is about time the Institute took up the matter, by preparing a Registration Bill that shall be for the general good of the profession: not a mere commercial measure prompted by the sole motive of putting into the pockets of a close profession the funds which are now taken by anyone, but a measure that shall raise the professional status by assuring that a man calling himself an architect shall, by education and examination, have qualified himself to practise as such.

As related in some way to this matter, Mr. Tubbs made the astonishing proposal that the Institute and the Society should divide their work, the Institute being "the sole examining body and responsible for the standard of ethics, concentrating its attention on the advancement of architecture, while the Society would give its undivided attention to studying the welfare and the business interests of architects." We have personal knowledge of the similar division of work which, Mr. Tubbs says, subsists in the medical profession between the Royal Colleges of Physicians and Surgeons and the Medical Association, but as the Institute and the Society have already failed to come together on the only possible common ground, it seems futile to suggest such a scheme as this, which is quite beyond the bounds of possibility.

The Architectural Possibilities of the Panama Canal.

ARCHITECTS in the United States have a far greater share in the carrying out of municipal and national schemes than is the case in this country. Many of them have been distinguished by great administrative capacity. It is therefore only the nature of things that the Senate should have passed a resolution authorising the National Commission on Arts to report on the artistic character of the structure of the Panama Canal. In this country we should have left such a matter entirely in the hands of the engineer who, in adding so-called architectural embellishment would thereby have made a blot on the effect of his own work. We do not know exactly what structures are contemplated in connection with the Panama Canal. It seems probable that they will be chiefly the entrances, and there the National Commission will have opportunity for recommending architectural additions in keeping with the magnitude of this amazing work of civil engineering. In their railway stations the Americans have shown what splendid results are possible when architect and engineer, each animated with the true spirit, can combine to achieve; and there is every reason to suppose that the same successful combination will be effected in connection with the Panama Canal.

Temple Bar.

THERE are fragments of London in many a country place—like the column from old Blackfriars Bridge that stands in a garden at Ware—and there is no occasion for regret in regard to them; but it is admittedly a pity that such an historic structure as Temple Bar should have been taken out of London and put as the entrance gateway to a Hertfordshire mansion. With great pleasure, therefore, we note that a suggestion for its restoration to the metropolis was brought forward at last week's meeting of the London County Council. The chairman of the Local Government Committee, to whom the suggestion was addressed, said he would be happy to bring it before his Committee, and we may hope that negotiation with Sir Hedworth Meux, the present owner of Temple Bar, will be opened and that ultimately we may see Wren's arch again in the capital. It cannot be restored to its original position, for the obvious reason that it would block the traffic, but on the Embankment or in one of the parks Temple Bar might be very happily placed.

THE RESTORATIONS OF CANINA.

BY A. E. RICHARDSON.

VERY few people have any substantial idea of the influence once exercised by the archaeological researches and imaginative conjectural restorations which reveal the tireless industry of Luigi Canina (1795-1857). To-day, indeed, the name has no familiar sound; the illustrious Italian author once venerated in England is no longer consulted; and his monument—the inspiring tomes depicting the glories of a past civilisation—is relegated to a humble place in the Institute Library.

We are so closely connected with the middle period of the last century as to be almost unable to appreciate its aspirations with exactitude; and, in addition, there is ever present, to disturb our judgment, the varied and complex accomplishments which tend to obscure the brilliancy of the central movement, namely, the rise of Neo-Classic architecture to its zenith. The artists of that epoch investigated so many fields of art, and evolved so much of petty interest, that their very enthusiasm proved treasonable to the breadth of view and clarity of expression evinced by their immediate predecessors. Hence the inevitable suspension of imagination which succeeded to the brilliancy of Pockerell's school; the bitterness of the campaign between the rival forces; the exhaustion and infertility which ended in Babylonian confusion, from which evil we are to-day making frantic efforts to escape. Such was the period when the prodigious researches of Canina first found acceptance in England. The old turbulent life of the eighteenth century, with its aristocratic verisimilitude, was fast being fused with the sterner qualities of an age pre-eminently mechanical. The cultured patron, the dilettante and the connoisseur, had all but disappeared; fashionable affectation in art, in itself innocuous, had yielded its position to careless indifference; but intellect was born of the wars of subsequent travail, and we are to-day better enabled to approach the problems of the future. This, however, is mere digression; let us concentrate our attention on the greater issue—the importance to



THE FORUM OF TRAJAN.

the modern architect of a knowledge of Canina's compositions. One cannot conceive of him as a scientific archaeologist; he possessed neither the logical persistency nor the accurate mind of a German professor. His essays in the province of conjectural restoration applied to the structures of antiquity are to-day discounted in favour of others of greater authenticity. The ponderosity of his volumes, not to mention their number, might prove disconcerting to many, but to the designer they breathe the soulful fire of genius. Canina is a pleasant authority to consult at leisure; his illustrations, when read in the old-fashioned way all engravings should be read, enchant the mind by the brilliant ideas they offer. Turning over the pages we are transported to a world of magic pomp and brilliancy; we catch glimpses of a more glorious Rome than ever existed, of a vital passionate civilisation which garbed itself in disciplined beauty; we live again the voluptuous life of humanity in its adolescent stage, we participate in its thrills and merrymakings. From the Fora we proceed to worship 'neath the Cyclopean eye of the Pantheon, we thread the mazy labyrinths of the Coliseum, or from a quayside gaze enraptured upon that motionless marble trireme, the Tiberine Island, rostra and aplustra dedicated to Æsculapius.

What consequence is it to our innermost selves that the brain of Canina attempted too much; what do we care for the opinion of more learned authorities? Away with pedantry, sweep aside the pettifogging barriers raised by the mere antiquary; we have suffered too much from insanely worshipping the fetish of "Bill Stumps, his mark." For the moment we are brought face to face with an artist's version of Classic architecture; we are learning to imbibe form. What hosts of diverse shapes offer themselves for instant transmutation, how immutable appear the eternal



THE ONLY PORTRAIT OF CANINA EXTANT.

(Reproduced by courtesy of Mr. Herbert Balsford.)

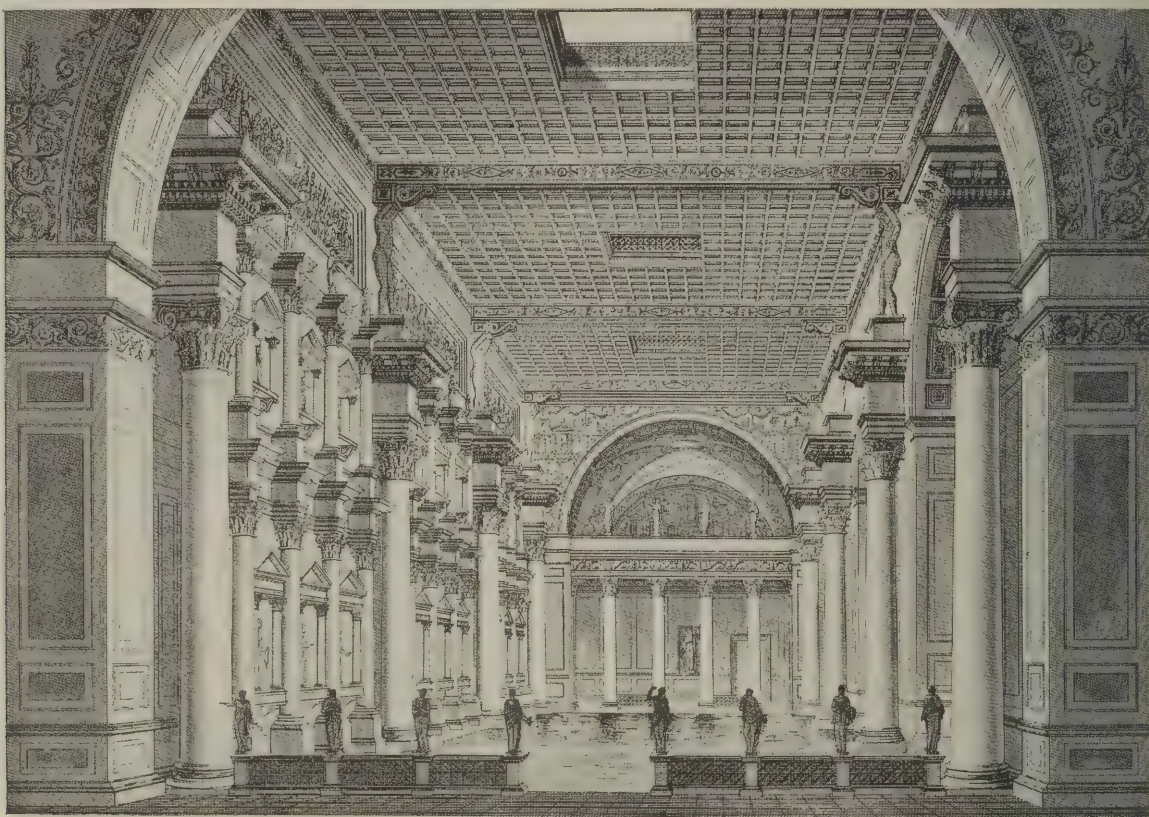
truths of architecture; the old Hellenic culture is discernible through them all; the charged passion seeking the ideal, that mighty potent force whose impetus is felt undiminished in every walk of modern life.

In the personality of Canina was embodied the history of Italian archæology. He represented the last member of a group strongly connected by tradition; their names comprise those of Claude, Francini, Vasi, Piranesi, Rossi, Rossini, Canina. The vastness of his undertakings mitigated against their accuracy; it would be impertinent to compare any one of his restorations with the achievements of a Cockerell, a Patouillard, or a Chedanne, or with the unrivalled delvings of the modern German explorers. Sufficient it is to state that Canina supplied the deficiency of a nineteenth century Piranesi; he certainly lacked the fluency of the latter for delineation, but he conferred a more lasting boon to posterity, inasmuch as he

forms, and under the auspices of Carlo Alberto, King of Sardinia, he published in 1843 a folio volume which dealt with the evolution of the Christian basilica style in various countries.

He next devoted his attention to the immediate edifices of ancient Rome and the Campagna. This resulted in the publication of four volumes of plates illustrating the former and two dealing with the Campagna; these having been followed in turn by a folio volume of prints relating to the topography of Ancient Rome.

Canina's indefatigability caused him to enter upon the investigation of the important monuments of the Roman Forum. His drawings of this subject were remarkable for the breadth of view they expressed and the profundity of knowledge they showed concerning the disposition of antique monuments. The text consisted, as in a previous case, of a terse résumé



THE GREAT SOLAR HALL IN THE BATHS OF ANTONINUS. RESTORATION BY CANINA.

bequeathed to the designer a veritable storehouse of inspiring motifs.

Canina was born on October 24, 1795, in Cassale, Citta del Monferrato. At the age of twenty-three he was engaged with Vasi, the publisher, who wrote various guides to Roman antiquities. His first important work as an author appears to be his "History of Ancient Architecture," which he divided into three series of Egyptian, Greek, and Roman. The theme of this remarkable treatise was concerned essentially with the monumental in architecture; and at the date of its publication all the then known monuments of antiquity were presented, and the text was arranged as a valuable résumé of all that had been written by ancient authors upon the special subject.

Early in the year 1842 Canina journeyed to Turin, where he was invited to give his ideas for a new church to be erected upon the site of one called St. John in that city. In this scheme his taste led him to favour the early Christian basilican type as a basis. Shortly after showing this predilection for basilican

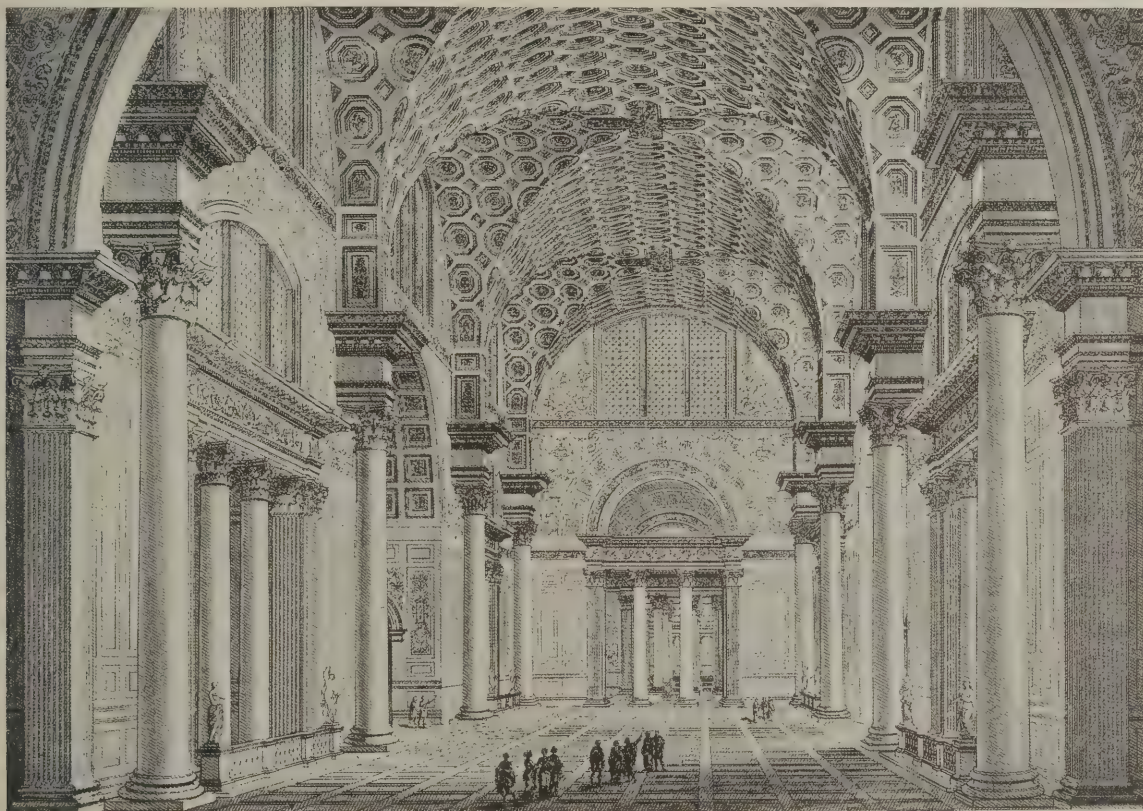
of the authorities who had previously dealt with the subject. After this came a topographical plan of the Campagna of Rome noteworthy for its painstaking research. Canina next turned his attention to Jerusalem, and published a folio volume entitled "Researches upon the Architecture of the Ancient Jews and the Temple of Jerusalem." But his active mind still circled about the attractions of the Eternal City, and he recommenced his Roman studies, producing a folio work of fifty-three plates dealing with ancient Tusculum, the Villas, the Forum, and the Theatre: this work was undertaken with the patronage of the Queen Dowager of Sardinia. Another of his works is a folio volume of forty-five plates describing the City of Veii. Ancient maritime Etruria was described and illustrated in four volumes, proving many years before the facts were universally accepted the Hellenic origin of early Roman art. And shortly after the issue of the last work Canina was inspired to publish a folio volume of forty plates dealing with domestic architecture, the idea being to demonstrat

the modern applicability of the most graceful forms distinguishing antique art, thus carrying out his pet idea to throw as much of the Classic spirit as he possibly could into the various productions of modern times, and thereby to improve the mechanical arts.

Perhaps what can be considered to be his chief work consists of two folio volumes, illustrating his excavations and restorations of buildings from the walls of Rome to Boville, along the old Via Appia. Sir William Tite visited this district in company with Canina, and at a meeting of architects held at the Institute described the impressions which the ruined monuments had produced on his mind—the endless succession of dramatic sepulchres, each differing in design, each presenting some fresh feature; the paved roads apportioned into regular intervals by the ancient milestones; remnants of once gorgeous villas, the homes of Sybarites, the Circi, the amphitheatre, the fora, masses

proportioned columns, and other conceits of that sketchy abstract architectural decoration. He realised the affinity between these frescoes and the traces of paintings in the Thermæ at Rome; he revelled among the treasures of the Vatican and other Roman museums, worshipping the bas-reliefs and viewing with satisfaction the component parts of the candelabra Piranesi had put together, compiled from antique fragments.

These heart-whole studies convinced him that the Greeks and the Romans allowed a licence of form and proportion in the decorative accessories of their art quite distinct from and opposed to the severer laws of monumental architecture. Canina rightly thought that he could adapt these "indicia" to modern conditions; that he could construct a perfect system of domestic decoration, plastic, light, reasonable, and graceful. During his two visits to England he twice



THE CALIDARIUM IN THE BATHS OF DIOCLETIAN. RESTORATION BY CANINA.

of encumbered ruins piled high by the Titanic hand of time, enshrouded in growths of clematis, conceptions of glory and splendour revealed by the intelligence and mastery of Canina.

Antoine Desgodetz had produced his great work, "Edifices Antiques de Rome," in Paris in 1682, and such was the excellence of the illustrations and their accuracy, that this work was referred to, by authorities competent to judge, even as late as the middle of the last century. The importance of the volume was immediately recognised by Canina, and it induced him to publish a supplementary volume with additional information concerning the buildings illustrated. It was his intention to collect the materials for a treatise dealing with the ornamental design of the minor features of antique domestic architecture. He had discovered valuable fragments on the Via Appia, and had made an accurate study of the fantastic paintings that adorned the walls of buried Pompeii—the strange scenes of delicate villas, attenuated alcoves, slightly

journeyed to the Crystal Palace in order to admire the principles of construction which had been carried into being; but he strongly censured the architectural details. We have lately seen evidences in the buildings recently erected in London and New York of the adoption of the iron curtain which combines three stories into one—an admirable idea in itself though often clumsily executed.

In the works of Labrouste and Duc we see the subtle influences for refinement which guided the taste of Canina. Surely the painted wall decorations of Pompeii and Herculaneum afford better motifs for transmutation than secondhand copies of American store fronts?

Canina was a great traveller. He had studied on the sites of the monuments of Sicily and Greece, he created an atmosphere for himself full of Classic lore and poetical imagination, and his ideas were justified not so much by obvious precedent as by the right assimilation of the Classic spirit. In 1849 he received



THE VIA APPIA, SHOWING APPIAN GATE, ARCH OF TRAJAN, AND VARIOUS SEPULCHRES.

the Royal Gold Medal of the Royal Institute of British Architects.

Following the tradition of Piranesi and other eminent Roman authors, he superintended the whole production of his publications in his own house in the Via Gregoriana at Rome. As he finished his manuscript the type of his text was composed and carried through the press under his own roof. A large room was occupied by draughtsmen and engravers, while another contained the presses by which the engravings were printed. Nearly all his works were prepared and published at his own expense.

Of a very sensitive turn of mind, Canina was deeply susceptible to criticism and opposition of opinion. He resented the learned strictures of the German literati, pompous Teutonic thunderings, disputing his scholarship. He was slighted by the critiques of the French, who cast aspersions on his taste. But he remained a giant in his period, exulting in his researches amidst the archæological and architectural literature of classic antiquity; venerating the themes of the past; never becoming a slave to precedent, but always striving to educate the architects of Europe to a broader acceptance of the Classic ideal.

His personal habits were of the simplest. While in England he rose at five or six o'clock in the morning, and with pen in hand immediately began work. He was punctilious in his correspondence and engaging in disposition. For the Duke of Northumberland he undertook in connection with Mr. Salvin, a Durham architect, a system of decoration for the reception rooms at Alnwick Castle. In a letter written to Professor Donaldson, at whose house in Bolton Gardens, Russell Square, Canina frequently stayed, he quotes an extract from a letter he had just received from the Duke at Alnwick: "I pray you to present my best compliments to Professors Cockerell and Donaldson and to assure them how sensible I am of their kindness in taking such a deep interest in this subject which I hold to be of national importance, that is to promote a more extensive system of artistic instruction in

England in that style of decoration." He was not free from the superstitious sentiments common to Italians and from an instinctive dread of evil consequences; would never permit his portrait to be painted nor his bust to be modelled. Professor Donaldson, however, by a friendly stratagem induced him to have his photograph taken (a reproduction from the engraving of which is here given). But it did violence to his feelings, and to avert "Malocchio" he crossed the fingers of his right hand as a charm against the dreaded evil eye!

Within the space of a short appreciative essay of this notable and learned man it would be next to impossible to compress a full account of his remarkable career; neither is it possible to illustrate other than a few of his conceptions. It has been thought wise, therefore, to limit the latter to some conjectural designs of surprising freshness.

The practising architect is at last beginning to realise the limitations and the right adaptation of archæological knowledge. He no longer blindly copies the Doric Order from the Parthenon, or pins his faith to details of obscure origin culled from ruinous temples in the Troad. But he is learning to respect the labours of the antiquaries at their proper value; using their accurate representation of the past as a stimulus to the problems of to-day. Professor Cockerell was an archæologist of the highest type, but he disdained pedantry; Canina in mind was similarly constituted, and no one realised more fully than he that pure archæology is a deadly snare for the unwary designer. Can we wonder at the scholarship and imaginative genius of McKim, when we read of the late hours he spent with his partners at the office, when the ordinary labours of the day were over, turning over the pages of Canina, delving into some old book of Roman themes, criticising, sorting, selecting—his elastic mind ever playing upon the gamut of the past the better to ennoble the architecture of his own day? The complexities of the present age confuse our minds by their kaleidoscopic variety; we rush hither and

either; we search for the truth in cohorts, or as private individuals; we become stylists owing allegiance to one; we laud to the skies the value of domestic architecture, and abase the monumental aspect to the dust. Or, on the other hand, we indulge in bitter invective, reviling the times or our own stars. Yet the fault is not inherent in these things, but is to be found in our own pusillanimity. There are so many fashionable generals in the field commanding the multitude to attend to them alone—nay, compelling attention by the blazing audacity of their own uninspired creations. What are the rank and file to do but blindly follow their leaders into a darkness Stygian in its intensity? The hack-workers of architecture, the journeymen and the slaves, curse their fate as underlings; they covet the lucrative practice of Mr. —; they long to rise to the zenith attained by the renowned Mr. —; in their desperation to achieve instantaneous notoriety, they filch the latter's most cherished abortions, and burn them out again in monstrous measure. To such a low ebb has the Cinderella of the arts fallen: she sits brooding among the smouldering cinders, a lovelily, indolent hussy, ignored by her uglier sisters the arts of painting and sculpture. But the fire is not yet extinguished.

COCKERELL'S RESTORATION OF THE ULPIAN BASILICA.

THE original of the drawing by Professor Charles R. Cockerell, which we reproduce as the Centre Plate in this issue, was found some five-and-twenty years ago in the vaults of Old Burlington House, where it had probably lain with a number of others since the property of the Academy was removed (about 1869) from the National Gallery to the new building in Piccadilly. It is probable that the original perspective drawing was made by Cockerell's chief clerk, T. G. Goodchild, and worked upon subsequently by the professor, who drew in the figures and gave that brilliant effect of light and shade which is characteristic of all his drawings. The drawing illustrated, together with a number of others, is now framed and hung in the Architectural School at Burlington House.

In this conjectural restoration of the interior of the Ulpian Basilica the columns of the ground and upper storey have been omitted both on the right- and left-hand sides. It will be remembered that the plan of the basilica is oblong, surrounded by a double aisle of columns on all four sides, and in two stories. At either end are the semicircular apses, which constituted the law courts. These apses, about 124 ft. in diameter, were covered with immense hemispherical vaults, and were therefore important examples of the arcuated style; on the other hand, the basilica with its peristyles was an equally important example of the trabeated style; so that in this one building, and in conjunction side by side, the two styles were brought together. It would possibly have been more interesting to have had a drawing from the interior of the apse looking towards the basilica, so as to see the effect of the columns of the upper storey running across the arch.

The French Grand Prix Dutert in his plan masked the junction by screen walls on either side of the five central intercolumniations, and on the upper storey may have contemplated a solid wall pierced only with openings which would allow the persons in the gallery on the first floor to look down into the law court. In Canina's restoration the coffers of the hemicycle are shown between the columns, which gives an awkward twist to the latter. Owing to the shading this is not so clearly shown in Professor Cockerell's drawing, which otherwise resembles that put forward by Canina; the only difference being that between the clerestory window of the attic storey Cockerell puts in figures of the Atlantes type similar to that which he

pieced together of the Great Temple of Jupiter Olympius at Agrigentum.

The whole building is said by Pausanias to have been roofed over with tiles of gilt bronze. The columns of the basilica were of various-coloured marbles. Its architect was Apollodorus of Damascus, who was probably responsible for the design of the Temple of Trajan, and advised Hadrian to raise the Temple of Venus and Rome on spacious vaults in which he could store the machinery of the Colosseum which stood close by.

R.I.B.A. PROBLEMS IN DESIGN.

ON page 551 of this issue we illustrate the design for a Senate House for a Modern University by Mr. H. A. Dod, recently approved by the Board. This is the last of the designs for Subject IV. (a) which we shall illustrate.

For Subject V. the designs required were for (a) a picture gallery in a public park, and (b) a village church. The approved designs for (a) are by the following: H. C. Bradshaw, J. Carey, A. D. Clare, A. E. Davidson, G. Davidson, N. S. Dixon, W. E. Foale, E. Gee, F. Jenkins, T. T. Jenkins, S. Stevenson Jones, F. O. Lawrence, B. A. Miller, B. Newbould, A. N. Shibley, S. Soper, A. Thompson, W. H. Thompson, and A. Wilson. Of these nineteen designs fifteen are by students of the Liverpool School of Architecture; the remaining four being J. Carey, A. D. Clare, W. E. Foale, and S. Soper.

The approved designs for a village church—Subject V. (b)—are by the following: H. R. Atchison, P. D. Bennett, Allan L. Freaker, H. J. Higgs, Robert M. Love, E. A. L. Martyn, F. James Maynard, A. Nisbet, and A. J. Sparrow: most of whom, we believe, are students at the Architectural Association School.

MODERN SMALL HOUSES.

AS the fourth example in this series we illustrate on page 547 a pair of cottages at Mouldsworth, near Chester, erected from designs by Mr. Patrick Abercrombie. The cottages are on a very pleasant site on the outskirts of Delamere Forest. They had to be built very cheaply (they actually cost £180 each, exclusive of fencing), and it was decided to attempt to obtain an effect by means of a simple colour scheme. Local bricks of good colour were not available; the walls were therefore built of common bricks (11 in., with cavity) and colour-washed a rich cream. The roof was covered with dark red pantiles, the shutters and trellis porches were painted emerald green (which quickly fades), the window frames, gutters, etc., white, and the doors black. The only ornamental features, the trellis porches and shutters, added very little to the cost. The front of the cottages faces due south, and as the sun in the valley beats down very fiercely an overhang, 2 ft. 2 in. deep, was given to the eaves. This has the result of keeping the bedroom windows cool in summer; while in winter, when the sun does not rise so high, the shadow is much less. On the north front the overhang is reduced to about 9 in. Each cottage has a large garden, and the object of the yard wall is to act as a screen to the back door and dust-bin, no windows opening on to it. There are no building by-laws in the district, and it was possible to make the ground and first floor 8 ft. 6 in. high in the clear.

In designing the cottages it was felt that a single horizontal treatment would be more suitable to the setting than a vertical one, in which connection it may be observed that the adaptability of formal architecture to picturesque surroundings is continually demonstrated in the old towns on the South Coast of England.

HERE AND THERE.

IN engineering works like the erection of a Forth Bridge across a mile of water, or the construction of a Dreadnought with a displacement of 40,000 tons, we have evidence enough to prove the greatness of the times in which we live; but when we come to take stock of architecture and building, how small are our achievements when compared with the works that were wrought on the banks of the Nile three, four, and five thousand years ago. Our cathedrals are big buildings, but the largest of them—York—is not more than 525 ft. in length by 250 ft. in width; whereas the Theban temple of Karnak, the most stupendous building ever erected, measured no less than 1,200 ft. in length—nearly a quarter of a mile—by 350 ft. in width. Even the baths of the Romans, mighty though these were, fall short of such dimensions. And when we study the great blocks that were used for the Egyptian columns and lintels our astonishment at the result is as complete as our ignorance of the means by which these huge stones were got into position. Even on Salisbury Plain we can wonder enough how the Druid builders accomplished the task of setting such monoliths on top of one another, but a far greater enigma confronts us in the pillared halls beside the Libyan waste. To-day we watch the gaunt arm of a "Scotchman" with a heavy girder or cube of stone swinging on the end of its steel wire rope, and we gain an impression of giant force under human control. But the 66 ft. columns in the hall at Karnak were built of drums that dwarf our own to little bricks, and what modern builder would like to handle granite lintels 35 ft. long and 4 ft. thick? How the Egyptians accomplished the feat is still a mystery; their wall-paintings give us a hint that the wheel and the windlass and the lever were known at that ancient time, and with this small indication a score of ingenious theories have been put forward. The stones of the Pyramids, we are told, were prised along a brick slope that was raised as the work proceeded, and the tremendous column segments and mighty lintels were lifted up and up by similar means. But this is all conjecture; there is no title of evidence to support such theories; and since unnumbered centuries have already passed away without offering any glimpse of a solution, it is likely that the mystery will never be solved. The only certain thing is that these Cyclopean masses of material were quarried and shaped and set up one upon another. For the rest, bearing in mind that the Great Pyramid occupied 360,000 men for twenty years, and that the building of Karnak went on for seven centuries, we can only assume that an unlimited supply of labour handling unlimited supplies of material for an unlimited number of years was capable of a stupendous collective force of which, lacking the details, we can have no exact conception.

The architectural world is now fairly bristling with presidential addresses; they are being exploded on all sides, but the detonations unfortunately are not loud enough to attract much attention—it is mere pop-gun work. Why so? Surely in the course of a whole year a president might find material for a good address. The truth is, there is too much material, and the presidential utterance fails by reason of its wide range. The heads of societies, instead of giving some live talk on a single subject, weary their audiences with an annotated report of the year's doings. The commencement is never exhilarating. The president proceeds to say what he supposes is expected of him—to express his appreciation of the honour which the members have conferred upon him, etc.—all of which, however, no one wants to listen to: and then we are led, in weary stages, to the membership figures, the question of new premises or of old ones, and a host of profes-

sional matters that could be assimilated far more profitably in a printed report.

It is, of course, no easy thing to give an effective address, and architects do not pretend to be either literary experts or platform orators; but I am sure it would be far better if a president took a single theme of some importance, and worked away at it zealously, expressing his own opinions with energy and leading along to some definite end. As it is, more often than not we have to pretend to be interested in what is practically an annual report with stray allusion to familiar topics, winding up with a peroration in which the Art of Architecture is lost amidst prolonged applause!

Is there anything in modern German architecture we are accustomed to regard it askance, and to be ready with a host of severe adjectives. But, so far as I can see, this is not a correct estimate. There is no need to spend a moment over those productions, whether in structural design, in ornament, or in furniture, which out-Art-and-Craft the Arts and Crafts; they are mere freaks of design which have no other claim than that of novelty. But there is quite another class of work now being done in Germany, a sort of Classic with a multitude of new motifs. Some of these latter are still reminiscent of the Arts and Crafts, but they are lost in the total effect. Many of these new German buildings display an excellent scheme of proportion throughout, and are enriched with decoration which we can honestly admire. There is, too, a regularity in their treatment which is very pleasing and in great contrast to the curves and excrescences that disfigure the work that was formerly done in Germany. Their chief defect is the introduction of certain coarse, almost barbaric, elements of decoration and a crudity of form in many instances which spoil the work. German architects, however, are at least making an attempt to do something which is pleasing whilst being fresh, and there is merit in that attempt. To merely take Classic or Renaissance buildings and reproduce them entire or in part is to proclaim architectural sterility; hence, anyone who tries to do something individual at least deserves consideration, and in my own opinion is that the Germans, in working on this basis, are doing far better work than is generally set down to their credit. We shall have to stop our wholesale condemnation of modern German architecture in the face of such a building as the Hotel Adler.

Anyone who knows the Alps, either from personal experience or from a close reading of Whymper's absorbing pages, will be familiar with the overhanging cornice of snow or ice—that precarious spot on which a man may be supported, perhaps, a thousand feet above the gleaming glacier. But the term is not an architectural one, and I was rather puzzled therefore by the description in an Edinburgh newspaper that the new Masonic Hall in that city has its upper walls "enriched with pilasters and overhanging cornices."

The Gothic enthusiasts of the mid-nineteenth century could hardly find expressions strong enough to revile the houses of 1800 and onwards; and yet to-day we find a whole school of thought looking back with approving gaze to that work. The architectural wheel, turning once more, has brought a fresh phase to the top. What if it should ever recover the Victorian! Already there are certain among us who are moving the figures into the 'thirties, and even the 'forties. Surely they will never ask us to admire the 'fifties and the 'sixties? But as G.B.S.'s William says: "You never can tell."

UBIQUE.



SELECTED DESIGN FOR THE MISSOURI STATE CAPITOL, U.S.A. TRACY AND SWARTWOUT, ARCHITECTS.

THE MISSOURI STATE CAPITOL COMPETITION.

WE illustrate on this page the selected design, by Messrs. Tracy and Swartwout, for the new Missouri State Capitol. It is interesting to note that this is the first competition for a State Capitol which has been held under the auspices and with the approval of the American Institute of Architects.

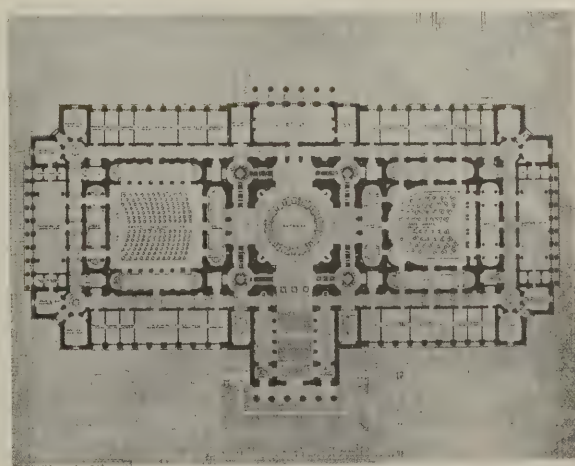
The site for the projected building is a superb one, being situated on a great bluff, about 100 ft. above the Missouri River, on a promontory that so projects as to be visible for fifteen miles up and down the river; the bluff ending in a jagged cliff with natural terraces down to the water. The new building has been placed nearly in the centre of the site and is set upon a terrace that extends out about 30 ft. from the building on all sides.

In most of the existing Capitols in the United States, the Senate and House are placed on the first floor, with the executive floor just below. But the majority of them have these disadvantages—an inadequate approach to the legislative floor is difficult, and is usually on the dome, or has to be reached through a rather low vestibule; while the space under the legislative chambers is dark and is usually taken up by storage space and vaults. These disadvantages the architects of the Missouri State Capitol have endeavoured to overcome. They started with the definite decisions that the floor of the dome should be on the legislative floor and should be unencumbered by monumental stairs, that the legislative chambers should be as near as practicable to one another, and that the entrance should be through a portico and not through a series of congested arches in a basement. Further, they did not consider it architecturally good to enter a low vestibule from a great portico, and so did the only logical thing—they placed the portico at ground-floor level. This gave a flight of steps in front of the portico about 18 ft. in height, the portico giving entrance through a large central door to a barrel vaulted vestibule about 60 ft. high, in which is a monumental flight of steps leading directly to the dome. This is the main scheme of the design, a perfectly simple and logical one, but which strangely

enough has never been applied to a State Capitol nor, so far as the architects are aware, to any monumental building in America. By this arrangement nothing is forced and everything is in scale, and an observer standing on the terrace steps can see through the great doorway the major portion of the dome.

The plan of the building is practically symmetrical, being composed of three elements—(1) The complete circuit of offices on the outside; (2) the uninterrupted circulation corridor—both of which features, being low, are expressed by the lower Order of the exterior; and (3) the Senate and House, the vestibule, and the library, which, in turn, in the form of a Greek cross, lead up to and support the great mass of the central dome.

The offices are practically continuous and are very well lighted, being only 20 ft. deep and the windows being the width of the inter-columniation. The circulation corridor is wide and continuous and has outside light at the corners. The House and Senate chambers are as near together as is consistent with the size of the necessary lobbies, and project about 20 ft.



Rotunda in centre Senate Chamber to right, House of Representatives to left, Committee Rooms and Lobbies around, and Legislative Library in centre of rear elevation (at the top).

MISSOURI STATE CAPITOL: PRINCIPAL (FIRST) FLOOR PLAN.

above the roof, so that they have direct outside air and light and afford the ventilation so necessary in a climate like that of Missouri.

The dome which crowns the whole composition is of 60 ft. internal diameter, its main features being the clearness of its floor space, and the outside light which comes through the great semicircular windows, as well as those in the drum of the dome.

The columns of the portico are 48 ft. high, somewhat on the lines of the columns of the Temple of Jupiter Stator and are supported by the subordinate Order, which is that of the Temple of Vesta.

CORRESPONDENCE

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents.

Correspondents are asked to be brief and to write on one side only of the paper.

Surveyors' Fees and the London Building Acts.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The answer by "F. S. I." to "L. B. A." in the last issue of the Journal appears to be somewhat misleading. Probably the answer is meant only to apply to the case stated by "L. B. A.," but the general reader is apt to take it that in no case are two sets of fees chargeable by the district surveyor. I would therefore point out that Section 18 (3) of the London Building Acts (Amendment) Act, 1905, specifically provides that, "Where any works or services, other than those carried out or performed in pursuance of this Act, are carried out or performed in respect of any building, the said fees shall be in addition to, and not in substitution for, any fees which may be payable under the Act of 1894 in respect of such other works or services as aforesaid."

For instance, suppose the L.C.C. in the exercise of its powers under Section 9 of the 1905 Act required, *inter alia*, a staircase leading to the roof of a building, and it became necessary to construct a dormer door at the head of such staircase, the district surveyor would have to see that the provisions of Section 61 (1) (and possibly Section 59 (2)) of the 1894 Act were carried out with regard to such dormer, and, therefore, a fee under the 1894 Act would be chargeable in addition to the fee under the 1905 Act.

London, W.

M.

Architectural Schools and Pupilage.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In the leading article in your issue for November 6 attention is drawn to the importance of bringing home to the architect, the student, and the parent the essential value of the training given in the recognised schools of architecture. This is a very important point, for, as stated in your article, the number of students in these schools is comparatively small.

One is constantly meeting students of architecture who, knowing nothing about these schools, have become articulated to architects, and, unfortunately, one finds that such students in many cases, although they may have been two or three years in an architect's office, have not passed the R.I.B.A. Preliminary Examination, nor any examination accepted by the Institute in lieu of this.

One is glad to be able to say that some of these students, when the facts are put before them, have the grit to take up the necessary work for the Preliminary, though that means abandoning, for the time, work which is not only more interesting, but which also seems, to the student mind, more useful.

And then these students, realising the great advantage of the school over the office during the first years of training, regret their inability to take up the full course at the schools, and attend what partial courses

the schools offer in the evenings, or, at the most, perhaps, one half-day per week.

It ought to be made practically impossible for student to become articulated to an architect without being made fully aware of the importance of passing the R.I.B.A. examinations, and of the advantages offered by the schools.

I believe most parents, if they knew of the school would gladly avail themselves of their advantages, only for the reason that a student can try the school for a term or a session, and then, if he finds the work uncongenial, or if found unsatisfactory by the staff of the school, he can abandon architecture and adopt more suitable profession.

How many men are now earning miserable pittance as more or less unsatisfactory assistants, simply because, having been articulated to an architect, there was no easy escape from a profession which they discovered needed far more than their "taste for drawing"?

I think a great deal of good would be done if the Institute adopted some such scheme as the following:—

(1) Drawing the attention of the head masters of public and secondary schools to the Institute examinations, to the importance of intending architects passing the Preliminary or similar examination before leaving school, and to the advantages to be derived from study at the recognised schools of architecture. This might well be done annually.

(2) Requesting members and licentiates of the Institute to draw the attention of intending pupils and their parents to the recognised school in their district, and not to take as a pupil a student who had not passed the Preliminary or a similar examination.

(3) Giving particulars of the recognised schools on the form of application for the Preliminary Examination. Until recently these particulars only appeared on the form of application for the Intermediate, with the result that many students saw them for the first time when it was too late.

(4) Strengthening the position of the schools by accepting, as testimonies of study for the Final, designs prepared to conditions set in the schools, as well as those prepared to the R.I.B.A. conditions.

(5) In accordance with the spirit of Clause 4 of the Supplemental Charter, gradually bringing pressure to bear on students to pass through a course at a recognised school.

The University, Sheffield.

W. S. PURCHON.

Society of Architects Examinations.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—What means this discussion regarding the areas of circles? Surely architects know what every school-boy learns in the first elements of mathematics, namely, that the area of a circle = π . Wherein is the need of .7854 and "diameter squared \times 9 inches 5 parts" (!)? Manifestly, we are a learned body of men!

Glasgow.

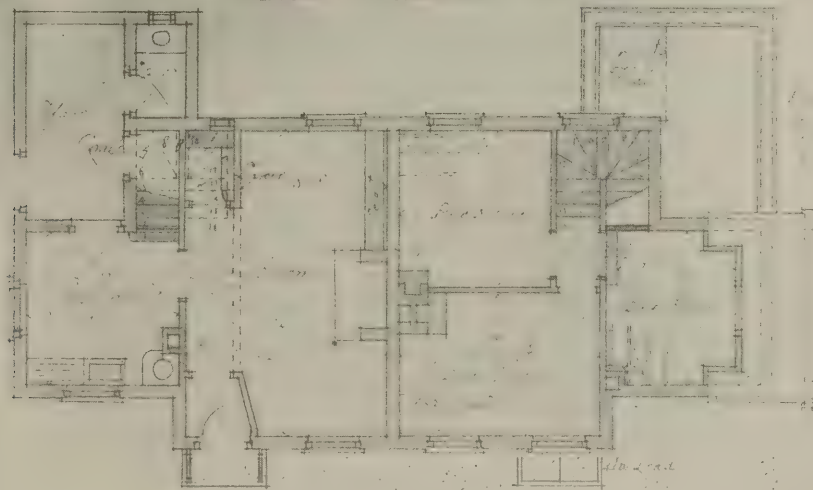
ARCHITECT.

WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS.

AS the fifth example in this series we reproduce detail drawings of the façade of Professor Beresford Pite's London, Edinburgh, and Glasgow Assurance Building in Euston Square, London. The building, which was erected in 1907, is a characteristic example of Professor Pite's somewhat severe adaptation of the Classic style. There can be no doubt, however, that it is a remarkably successful building, and exactly suited to the purpose of housing a great corporation. The elevations are carried out wholly in Portland stone.



Front Elevation



Ground Floor Plan

First Floor Plan

MODERN SMALL HOUSES. IV.—COTTAGES AT MOULDSWORTH, NEAR CHESTER.
PATRICK ABERCROMBIE, ARCHITECT.

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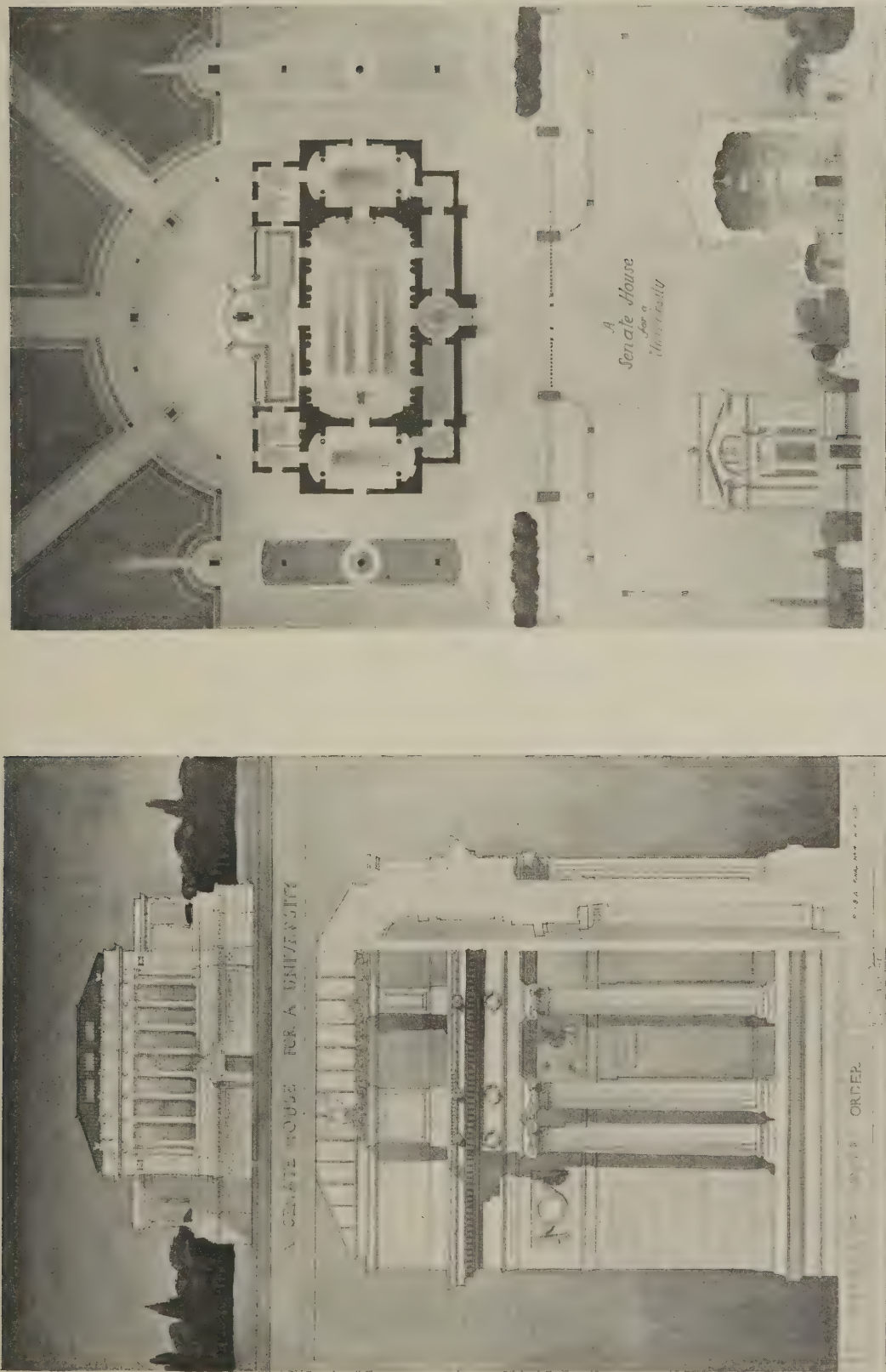


INTERIOR VIEW OF THE FORUM OF TRAJAN, SHOWING THE ULPIAN BASILICA.

RESTORATION BY CANINA.

THE
UNIVERSITY OF ILLINOIS

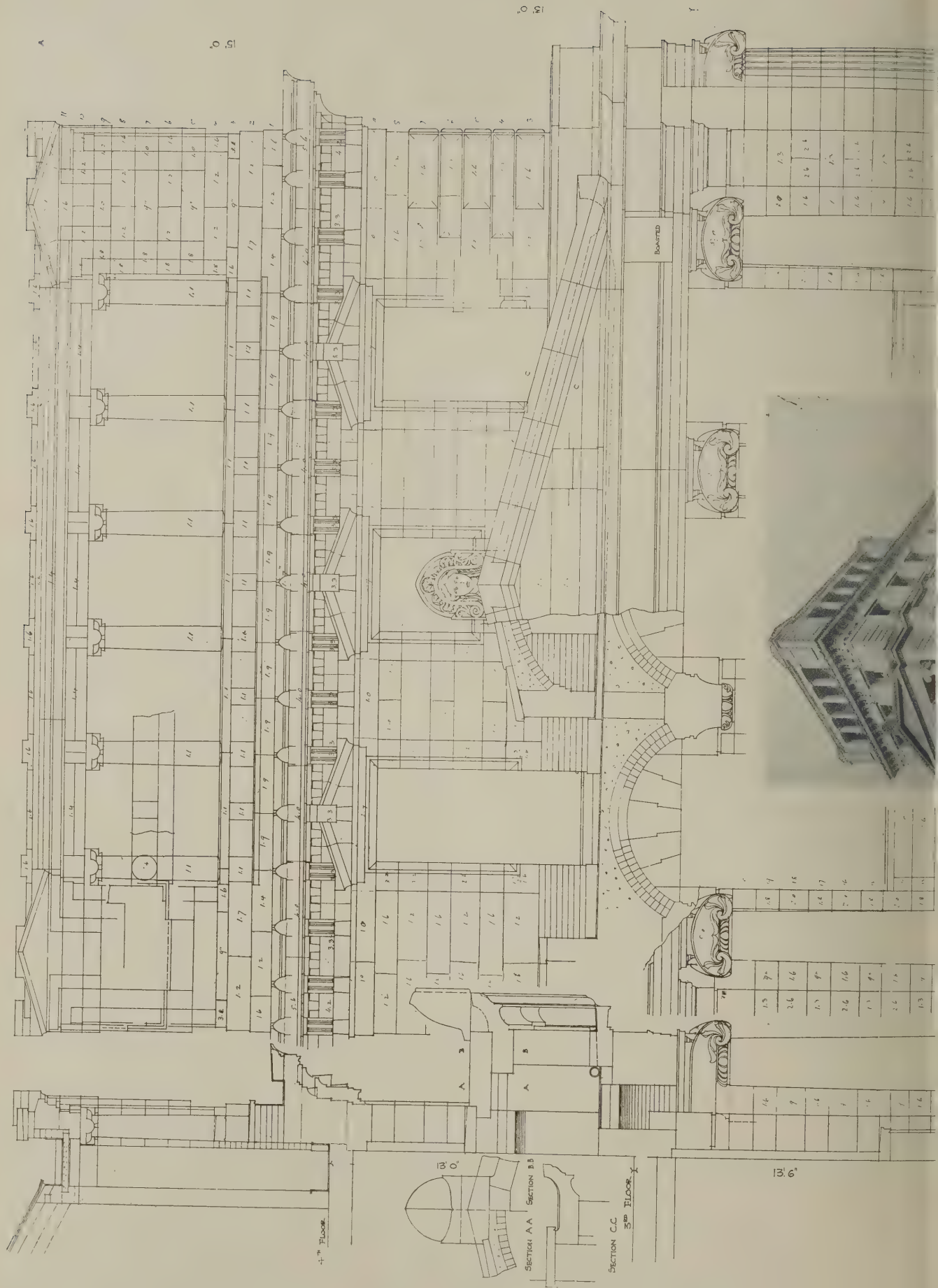
STUDENTS' PAGE.

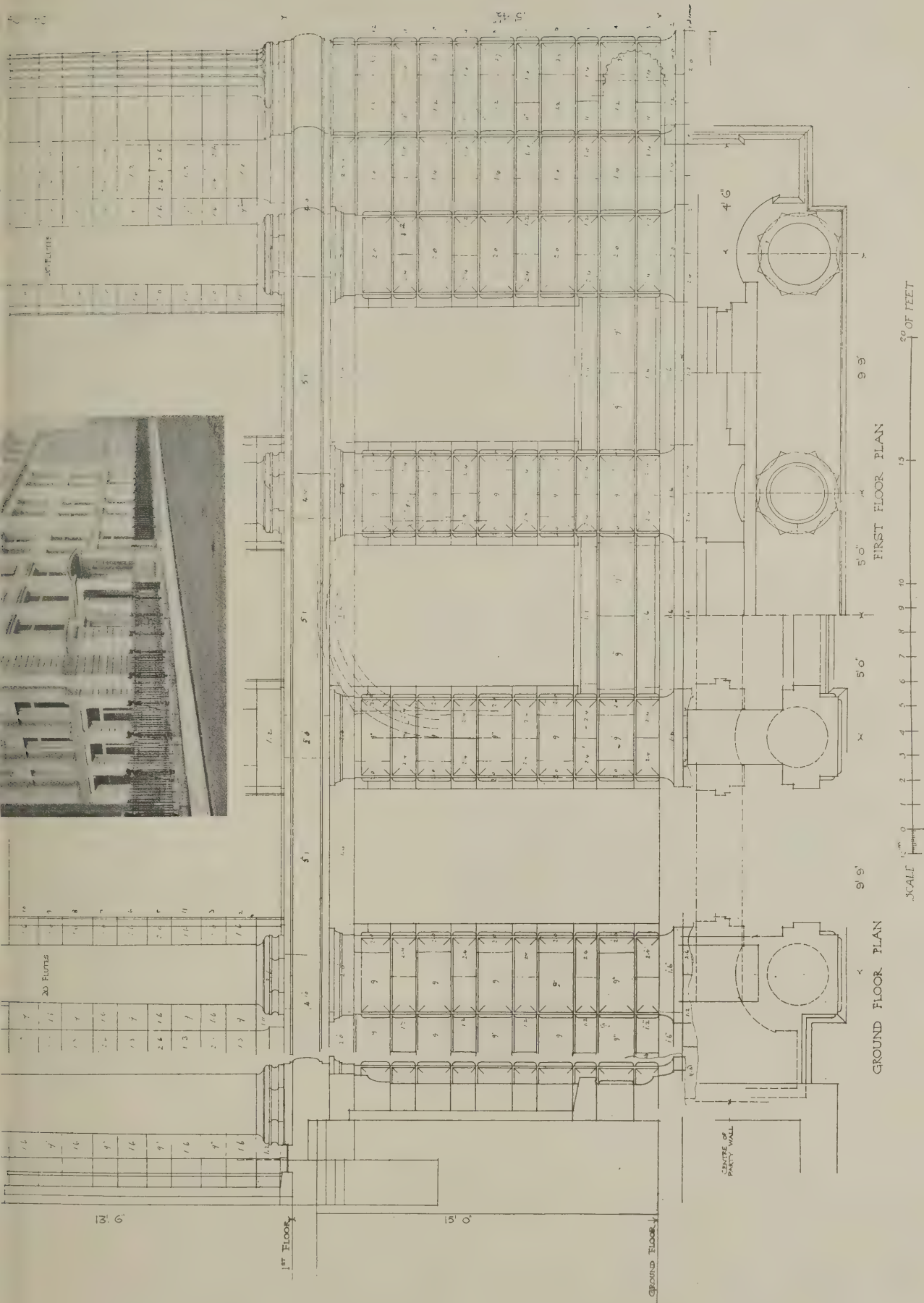


TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION: APPROVED DESIGN FOR SUBJECT IV. (a). BY H. A. DOD.

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L. E. & G. OFFICES EUSTON SQUARE
ELEVATION TO EUSTON ROAD





WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS. V.—LONDON, EDINBURGH AND GLASGOW ASSURANCE BUILDING, EUSTON SQUARE, LONDON.
PROFESSOR BERESFORD PITE, F.R.I.B.A., ARCHITECT.

FIREPROOF OFFICE FURNITURE.

The principle of fireproof construction having been fully recognised with respect to buildings, it is rather curious that the necessity for equally fireproof interior fittings should have been disregarded, if not altogether overlooked. Modern building owners, however, are alive to the danger of combustible materials within their buildings, and the practice of providing comprehensive equipments of fireproof furniture and office fixtures throughout is rapidly on the increase. Evidence of this growing development is apparent in the opening of new and larger showrooms and offices in Holborn by the Art Metal Construction Co., which, although still closely allied to Roneo, Ltd., has now been formed into an independent company (with works at Thames Road, Silverdown, E). Not only doors, architraves, partitions, and other essentially architectural features, but adjustable shelving, vertical letter-files, counters, roll-top desks, strong-room fittings, and other details of internal equipment are now manufactured in steel by the Art Metal Construction Co. Fireproof book-sacks for libraries are made in two styles—the "Bracket" and the "Standard." The former consists of a simple standard containing winged bracket shelving, which may be extended to any number of tiers with suitable reinforcement. The supporting standard is built of steel plates formed into two box channels riveted to



STEEL SHELVING IN THE LIBRARY OF EDINBURGH UNIVERSITY.

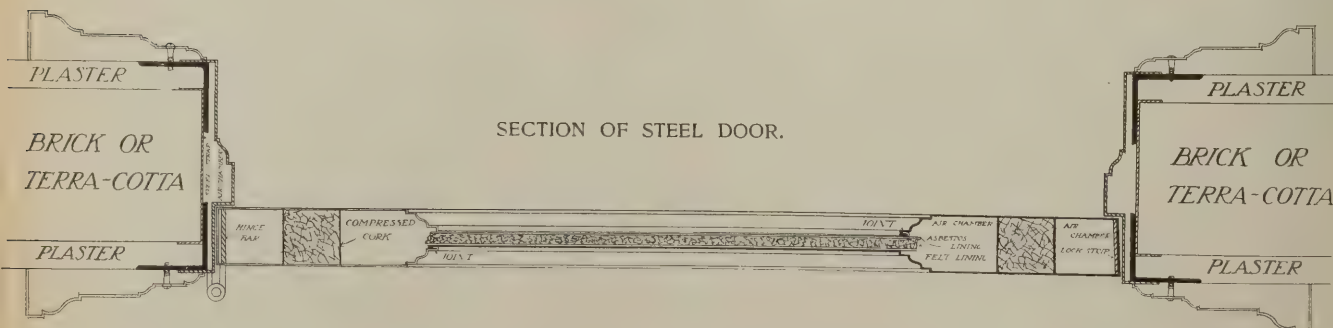


FILE CABINET WITH STEEL SHELVES AND ROLLER CURTAINS.

the bar upright. The shelf, which is strongly made from a single plate of steel, can be easily adjusted to any required depth by simply inserting the hooks on its rear edge into higher or lower slots provided in the standard. The floors of the corridors between the stacks are laid with inch-thick glass slabs, which allow sufficient light to the storey below.

The "Standard" type of shelving consists of wrought steel uprights slotted on either side at intervals of one inch for the reception of shelves. These shelves, the front edges of which are turned under in order to prevent sagging, can sustain the full weight of a heavy man without any visible deflection. We illustrate on this page a big installation of steel shelving in the library of Edinburgh University carried out by the Art Metal Construction Co. The stacks are of the double-faced two-storey type, with a gallery, the whole equipment being constructed of steel throughout. The glass floor is supported by the cases themselves, the need for supporting columns thus being eliminated.

Every conceivable type of office fixture required in public buildings, banks, or business premises — such as lock-up cabinets for clothes and other purposes,



SECTION OF STEEL DOOR.

counters, cashiers' desks, filing cabinets, etc.—is manufactured wholly in steel. We illustrate an installation of shelves and bookstalls with covering steel curtains, recently erected in a bank at Amsterdam. The material chiefly employed in the construction of these fittings is fine steel plate, specially rolled for the purpose. The usual finishes are fine baked enamel, lacquer, and electro-plate. The surfaces are perfectly smooth, and can sustain sharp blows without chipping off. We have seen examples of steel doors and furniture finished with a grain in imitation of a variety of woods; and so perfect the workmanship that, from outward appearance it is quite impossible to detect the difference.

We illustrate also a section of a fire-proof steel door as manufactured by the Art Metal Construction Co. As will be seen, it is built of two vertically continuous steel plates, one stile and one panel being formed from each sheet, and connected by interlocking seams on opposite sides of the panels. The panels are insulated with a sheet of asbestos next to the steel on each side, with a thickness of impregnated felt composition between to act as a non-conductor. In each hollow stile a strip of cork is inserted, having the effect of a non-sonant. Panels are formed by cross rails welded to the stiles by an autogenous process, the joints being altogether invisible. As shown in the section, the mouldings to the door architraves, of which a wide variety of sections are to be obtained, are applied direct and welded. These steel fire-proof doors, which have satisfactorily withstood the tests of the British Fire Prevention Committee, are practically no heavier than wooden doors of similar dimensions.

ARCHITECTURAL AND BUILDING INTERESTS IN SOUTH AFRICA.

(By Our Own Correspondent.)

JOHANNESBURG, October 21st.

Building Progress.

There is work going on in Johannesburg to the approximate value of £1,250,000, and this does not include private dwellings, which are being put up in large numbers in all the suburbs. The architectural appearance of Johannesburg, therefore, is being entirely transformed, and even in the suburbs an extraordinary change is taking place. In this connection it is interesting to note the remark made by the Past President of the Transvaal Institute of Architects (Mr. H. G. Veale), that money is now being invested in building schemes at from 8 to 10 per cent., whereas formerly architects were expected to design buildings to return from 12 to 15 per cent.

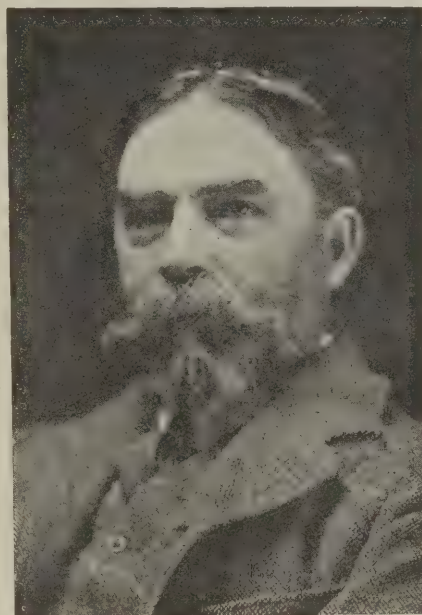
Transvaal Institute of Architects.

The newly elected President of the Transvaal Institute of Architects is Mr. Philip E. Treeby, who was born in Melbourne. Besides being an architect who has some of the important public buildings in Johannesburg to his credit, he is a talented artist, and has exhibited largely in black and white and water-colour drawings. The main subject which he and his colleagues will deal with during his term of office will be the draft Act for the proposed registration of all architects in the Union of South Africa. This draft Act has been prepared by the Council of the Institute, and is now under consideration for ultimate submitting to the Legislative Assembly. The Transvaal Act

which now controls architects does not give sufficient statutory powers, and debars the profession from exercising its proper functions in promoting efficiency, mutual encouragement and good fellowship. It is indeed most incomplete, and one may expect therefore that the new Registration Act will establish a better means of promoting architectural education as well as protecting the best interests of the profession.

The Late Francis Masey, F.R.I.B.A.

A most distinguished South African architect has passed away in the person of Mr. Francis Masey, F.R.I.B.A., who at one time was President of the Cape Colony Institute of Architects. Mr. Masey was articled to the late Mr. Alfred Waterhouse, R.A., and served him as an assistant for several years. He was a student of the Royal Academy Schools. He won the Soane Medal at the R.I.B.A. in 1887, as a result of which success he spent a year travelling on the Continent. He came to South Africa as architect to the Public Works in about the year 1896, and then joined, and a few years later became a partner in, the firm of Mr. Herbert Baker, which was afterwards known



THE LATE MR. FRANCIS MASEY, F.R.I.B.A.

as Herbert Baker and Masey. This partnership was dissolved in 1909. Mr. Masey then practised alone in Rhodesia.

While in Cape Town he interested himself with the old architecture and archaeology of the Cape, and many attractive articles from his pen appeared in the early numbers of "The State." He also initiated and for many years was the active secretary of the National Society for the Preservation of Objects of Historical Interest and Natural Beauty in South Africa.

Mr. Masey was exceptionally gifted in many ways, possessing the somewhat rare combination of artistic imagination and powers of expression with skill in planning and organisation. He took an exceptional interest in and gave up a great amount of his spare time to the education of his pupils. Pupilage was no perfunctory obligation to him. He gave a most interesting course of lectures on South African architecture at the South African College, and not a few of the young architects in South Africa owe a great debt of gratitude to him for the time and energy which he devoted to their instruction.

South African Branch of the Society of Architects.

This is a flourishing little body of architects in South Africa, who have their headquarters in Johannesburg; Mr. D. Ivor Lewis being the hon. secretary. The annual meeting was held last week, when Mr. E. H. Waugh relinquished his position as President in favour of Mr. M. J. Harris, who had formerly acted as treasurer. The branch numbers fewer than fifty members, but it is in a flourishing position financially and in prestige.

Architects' Diary and Year Book.

The popular publication of Mr. James T. Brown, "The Architects' and Builders' Diary and Year Book" for 1912-13, is now in the press. It should be of great use to the professions interested in other parts of the world than South Africa, by reason of the information it affords respecting all the architects and builders in South Africa, with their addresses, and all their wants in trade which can be supplied by merchants at home and abroad.

OBITUARY.

Mr. G. E. Grayson, F.R.I.B.A.

We regret to announce the death of Mr. George E. Grayson, the well-known architect, of Liverpool. He was a Fellow of the Royal Institute and for many years was a member of the Council. He was also a past president of the Liverpool Architectural Society. Mr. Grayson, who was in his seventy-ninth year when he died, commenced practice in 1860, on the completion of a long tour in Southern Europe. Assisted by many influential friends and relatives, he soon built up a large practice, which extended over most of England. His best-known works include the City Liberal Club, Walbrook, London; the Rainhill County Asylum; the Grain Stores at the north end of Liverpool, and the head office of the Bank of Liverpool. In Castle Street, Liverpool, he designed several insurance offices, including those for the British and Foreign, Scottish Equitable and Scottish Provident Companies, as well as Messrs. Jones and Sons' premises, Leyland and Bullen's Bank, Victoria Chambers and the extension of the North and South Wales Bank. His churches include St. Mary's, Liscard; St. Faith's, Waterloo; and the parish churches at Allerton and Woolton; while innumerable small houses and many large country mansions were designed by him.

He took the late Mr. E. A. Ould into partnership in 1886 and Mr. Hastwell Grayson in 1896, and retired from practice on the last day of the nineteenth century. He leaves two sons—Hastwell, now president of the Liverpool Architectural Society, and Ernest, Registrar of Grey University College, South Africa, and two daughters.

Mr. E. B. P'Anson, F.R.I.B.A.

The death occurred on November 9th, at his house in Kensington, of Mr. Edward Blakeway P'Anson, a well-known architect and surveyor practising in the City. Mr. P'Anson, who was sixty-nine years of age, was the elder son of the late Mr. Edward P'Anson, of Grayshott. He was a Fellow of the Royal Institute of British Architects and of the Surveyors' Institution, and was a vice-president of the latter body at the time of his death. Mr. P'Anson was responsible for a great deal of architectural work in the City, including the new outpatients' department at "Bart's."

THE SOCIETY OF ARCHITECTS.

PRESIDENT'S ADDRESS.

THE opening meeting of the 1912-13 session of the Society of Architects was held on Thursday last, when the new president, Mr. Percy B. Tubbs, F.R.I.B.A., delivered his inaugural address. He first referred to the question of architectural training, in regard to which a special committee of the Society is already actively at work on the details of a scheme for the establishment of ateliers throughout the kingdom on the lines of those which are so successfully carried on in Paris. The idea being to supplement the existing methods of training rather than to supplant them, Mr. Tubbs said it should receive the support of every architectural society. They therefore invited the whole-hearted and active co-operation of the Royal Institute of British Architects and its allied societies and of all other interested bodies.

Turning next to the position of the public in regard to architecture, Mr. Tubbs expressed himself in hopeful terms. Parliament, he said, had recently, for the first time, taken architecture seriously, and during the debate on the proposed St. Paul's Bridge, had laid down the principle that no public improvement should be carried out without due consideration being given to the architectural aspect or without consulting those qualified by nature and training to advise. Then the Town Planning Act (again for the first time in this country) had officially recognised the value of architectural beauty, and had given it the sanction and authority of an Act of Parliament. Architecture, too, was recognised, and protected to some extent by the recent Copyright Act. These were signs of the times, signs that might be noticed with increasing frequency both in the Press and in ordinary daily intercourse.

Registration.

Speaking of this, the President said: "The statutory education and registration of architects is a question which the Society has made its own and with which it has been identified for upwards of twenty-eight years, and in order to achieve the result which we all have so much at heart negotiations were entered into with the Council of the Royal Institute of British Architects more than two years ago. The negotiations were primarily on the registration question only, but the proposals of the Royal Institute Council differed so essentially in principle from those of the Society that we could not accept them, and the only way out of the difficulty, so far as the Institute was concerned, was to make provision for the members of the Society to join the Institute so that in any Registration Bill put forward by the Institute their interests would be protected. In other words, the proposed fusion was to the Society merely a means to an end, and that end was registration. The Society have always stated that if the Royal Institute will produce a Registration Bill with which they can agree they will step aside and let the Institute lead, and the Council of the Society kept their word by accepting the proposals of the Council of the Royal Institute. As you all know, the proposals were submitted to the members of the Institute in General Meeting, but after a lengthy and somewhat heated discussion the whole matter was referred back to their Council for further con-

sideration, and they have been considering it in committee ever since. This action was taken by the members of the Institute more because the proposal was complicated by the introduction into the proposed agreement between the two bodies of all sorts of provisions, including the heads of a Registration Bill, than because the principle of the scheme was objected to. Until the Committee's report is issued it is not possible for the Council of the Institute to make any official statement to this Society, but the negotiations have not been broken off, which is a great advantage, as it is always possible that the two bodies may meet again and resume their deliberations. Unfortunately, we are not in a position to guarantee that the negotiations will be renewed, and in the meantime the work of the society on behalf of registration has been held up for two years, and if we are to await the result of the deliberations of the Committee of the Institute before taking any action the whole question may be retarded for an indefinite period.

In these circumstances we feel it a duty to the members to introduce the Society's Bill into Parliament at the earliest possible moment, and we hope that it will be presented during the present Session. We do not yet know what attitude the Royal Institute of British Architects will adopt in this event, but we do know that the present Council, and the Institute as a corporate body, are pledged to registration, and, further, seeing that the R.I.B.A. Council was returned last June for the express purpose of carrying the registration movement a step further, I do not see how they can consistently oppose the Society's measure or what they can gain by doing so."

Official Architecture.

Mr. Tubbs next considered the question of official architects. He said there could be no doubt that every building erected by public authorities should be designed by the one man in the country who was best able to solve the particular problem involved. The system of employing the official architect did not ensure this, and the public interest suffered in consequence. Instead of securing the best available architect by public or limited competition or otherwise, corporations and Government departments entrusted important buildings, requiring special skill in design, to the officials who were appointed to their positions for qualities of an entirely different character—such as administrative ability or because of their special qualifications as surveyors. The public did not seem able to discriminate between knowledge and skill, nor did it realise that the ablest designers would never accept official positions under present conditions. When, however, they did recognise that better work at less cost could be obtained by employing an independent architect they would certainly demand an alteration in the present system.

It was not to be supposed that an architectural department for routine and advisory work was incapable of doing good public service; on the contrary, the president considered such a department to be almost indispensable; but it should not be employed in original creative works of architecture. "Many of our public authorities maintain a staff of assistants of a high standard of knowledge and experi-

ence who are intimately acquainted with the practical requirements of every class of public building, and if this knowledge and experience could be placed at the disposal of the most brilliant creative designer obtainable, when any original work was contemplated, the result would be a blending of the practical with the artistic and the production of a well-designed and thoroughly satisfactory public building."

The R.I.B.A. and the Society.

Turning to the future of the Institute and the Society, Mr. Tubbs made the suggestion that, as the Council of the Institute appeared to be very much overworked, they should divide their interests with the Society. In the medical profession there were the Royal Colleges of Physicians and Surgeons and the Medical Association, and it seemed that matters of business interest were left to the latter body to deal with, while the Royal Colleges confined their attention to examinations and ethics and to upholding generally a high standard of medicine and surgery. Why, said Mr. Tubbs, should not architects work on somewhat similar lines? the R.I.B.A. being the sole examining body and responsible for a standard of ethics, concentrating its attention on the advancement of architecture, while the Society would give its undivided attention to studying the welfare and the business of the architect.

Professional Defence.

A very important extension of the work of the Society is the formation of an Advisory Committee to deal with questions arising out of professional practice. A considerable sum has been set aside to enable this committee to practically and financially assist members in any litigation or negotiation which involve questions of principle affecting not only their own interests but those of the profession generally. The fund, which is ample for present needs, is only a nucleus, and it is the intention of the Council to add to it as may be necessary, so as ultimately to be in a position to fight any case which, in the opinion of the Council, acting on the advice of this committee, is of sufficient importance to the profession as a whole. This was not the first professional defence committee to be formed, but it is the first Mr. Tubbs thought, to be provided with a fund to enable it to take action.

Architectural Competitions.

The remedy for unsatisfactory competition conditions rests very largely with the profession itself. The promoting bodies do not always purposely err, but are sometimes in ignorance of the existence of the conditions which the profession considers should be laid down for competitions. Something might be done by having a statement issued in the first place to every local authority in the kingdom, and from time to time to other promoters of competitions giving the general lines on which it is suggested a competition should be conducted, and making it clear that if these lines are departed from, architects who are members of architectural societies will refrain from competing. This circular should be signed by the responsible officials of every architectural society in the kingdom. I also feel that an advertisement inserted each week in the professional journals making it clear to all pro-

ers of architectural competitions that conditions have to be approved by the Society before any of their members will compete, and suggesting that the conditions governing the competitions should be drawn up to agree with the printed particulars issued by the Society and the R.I.B.A., it would very soon educate the competitors up to a proper standard, and the competitions of the future would be much more satisfactory.

Mr. Tubbs proceeded to refer to the Architects' Benevolent Society, the Insurance Act, and finally to the position of an unattached architect. In connection with the last he said: "The R.I.B.A. have succeeded in getting some 2,000 architects become licentiates, but numbers of these appear to have joined under the misapprehension that it would be quite easy— in fact, more or less a matter of form—for them to become Fellows of the Institute. As a matter of fact, only ten have been able to satisfy the examiners and qualify as candidates for election as fellows, at the first examination which has been held. This examination proved not to be a mere matter of form, but a very real test extending over six days. How licentiates feel about this I do not know, but possibly some or even many of them would rather be corporate members of a progressive and thoroughly up-to-date society, working for reform all the time, than rely on non-corporate members of the inferior body. I, for one, shall watch future developments in this respect with great interest."

THE ARCHITECTURAL ASSOCIATION.

At last week's meeting of the Architectural Association a paper was read by Mr. John A. Marshall on "Marbles used in Greek, Roman, and Byzantine Buildings." The paper was one of extreme length, not lending itself to condensation; and in consequence of great pressure on our space we are unable to publish it in full. We hope, however, to give some extracts from it in our next issue.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.

Before last week's meeting of this Society Mr. F. H. Wrench, A.M.Inst.C.E., read a paper on "Surveying," in the course of which he said that the plane table was hardly ever used in this country, probably because the Ordnance Survey had done much of the work for which this instrument was most useful. But remarkably rapid surveying was possible with it. For rough work the student could easily make his own plane table. The theodolite was another instrument hardly known in England: it was most useful to explorers and some excellent work had been done with it in Canada, among the Rockies. Mr. Wrench exhibited a number of surveying instruments, including the latest Zeiss level, and showed samples of survey work carried out in most of the principal countries of the world. Mr. Joseph Husband, speaking in support of the vote of thanks to Mr. Wrench, said that British engineers and architects were very conservative in regard to surveying instruments. Continental nations were far ahead in the use of modern and up-to-date instruments. He described the Zeiss level, which was the newest and had many striking advantages over all others, its most important feature being the easy adjustment.

NORTHERN ARCHITECTURAL ASSOCIATION.

Mr. W. Milburn, F.R.I.B.A., in his presidential address to this Association last week, spoke at some length on the subject of housing, and then referred to the provision of sanatoria under the Insurance Act, observing in regard to the latter that if better living accommodation existed for the poor there would not be so much need for sanatoria; they, however, welcomed the provision in the Act which gave them State aid for the erection of such institutions. The president also dealt with the necessity for registration in the architectural profession, and expressed the hope that the Institute would bring it to a successful issue. If the profession were a body acknowledged by law it would be an inducement for more universities to establish Chairs of Architecture.

NOTTINGHAM ARCHITECTURAL SOCIETY.

Established fifty years ago, the Nottingham Architectural Society celebrated its jubilee on November 12th, when a conversation was held at Exchange Hall. The president, Mr. E. R. Sutton, F.R.I.B.A., in the course of an address, briefly traced the history of the Society; and then passed on to consider the architecture and the architects of the past half-century, instancing Pearson's Church of St. Peter, Vauxhall (built in 1864), as the first modern church vaulted throughout in brick and stone. There could be no doubt, he said, that an advance had been made, and it was gratifying to see that even the Government were at last becoming interested in architecture. Schemes were afloat for replanning our towns and villages, and Mr. John Burns with his Town Planning Act had set the official seal on a wide movement; and it would not be the fault of architects if this did not lead to great results. The increased activities of public bodies and their awakening interest in worthy buildings combined to give a wider opportunity to architects than the last fifty years had known. He hoped therefore that their Society would witness a great revival in art, and that Nottingham would get a lion's share in the honour.

FIRE-PROTECTION OF STEELWORK.

Mr. John Todd, district surveyor of the City of London, East, in the course of a paper read recently before the Bishopsgate Ward Club, said with regard to the fire-resisting covering required by the 1909 Building Act, but not required by the ordinary law, that it seemed to him to be sheer stupidity to erect a big building in which, say, the floors were supported by iron columns and beams and to leave the work unprotected from the action of fire. "It is not safe to assume that the opportunity of a quickly spreading fire will be absent even in office buildings," and the failure to provide adequate protection to the steelwork was a moral fault. It meant inevitable collapse of part of the building when fire occurred, with the possibility of loss of life. The City of London was too wealthy to be excused this very common neglect of an entirely reasonable precaution. These points would be met by applying the Act of 1909 to all buildings with such modifications and exemptions as an exhaustive consideration of the question might show to be desirable. The Act of 1909 was the most reasonable piece of

building legislation ever placed on the statute book. It contained nothing which an efficient engineer would not voluntarily adopt, and it did not involve increased cost of building or increased labour to the professional men engaged on the work.

IN PARLIAMENT.

(By Our Press Gallery Representative.)

Enlargement of the National Gallery.

Mr. Ormsby-Gore asked Mr. Wedgwood Benn, as representing the First Commissioner of Works, whether in view of the overcrowded condition of the Venetian Rooms in the National Gallery and the necessity of finding suitable space for the newly bequeathed Layard collection of Venetian pictures, it was proposed to further enlarge the Gallery, and if so whether he was prepared to receive representations on the subject before any action was decided upon.

Mr. Wedgwood Benn replied that the First Commissioner was quite ready to receive representations on the question of enlarging the National Gallery. A request for increased accommodation could not, however, be considered until it had been put forward by the trustees.

The Admiralty Arch.

Mr. Wedgwood Benn has informed Captain Murray that the proposal to place statuary upon the roof of the Admiralty Arch has been abandoned.

Prevention of Fire.

Lord Claud Hamilton asked the Home Secretary whether, having regard to the loss of life at the recent fire at Messrs. John Barker and Company, of Kensington, he would consider the expediency of providing by enactment that automatic fire alarms should be installed in all large business houses where a considerable staff was employed.

Mr. McKenna, in reply, said: I have communicated with the London County Council, who are the fire authority for London, and I am informed that according to the most recent particulars in their possession automatic fire alarms have been installed in some 200 premises in London, but that, although a considerable number of calls from these alarms have been received by the fire brigade, in only one case was an outbreak of fire found to have occurred. Under powers obtained in 1908 the Council, in authorising the erection of large buildings for the use of trade or manufacture, require the provision of fire appliances, including automatic sprinklers, and of direct telephonic communication with the nearest station, but so far have not required the use of automatic fire alarms. On the facts before me I am not prepared to recommend legislation in the direction suggested. The point of supreme importance in large business houses is that there should be adequate means of escape from all parts.

Lord Claud Hamilton suggested that a small committee should be appointed consisting of one official of the Home Office, one of the County Council, and a fire brigade expert to inquire into the subject.

Mr. McKenna promised to consider the suggestion.

King's College Site.

Mr. Barnston asked the President of the Board of Education whether the offer of the Board to receive a deputation on the question of the future site of King's College would include the intimately

related question of a site for the University of London.

Mr. J. A. Pease replied that the Senate of the University had not suggested that the question of a site for the University of London should be raised by their deputation. If, however, they desired to make any statement on the subject the Board would, of course, be prepared to receive it.

Ventilation of the House.

Sir J. D. Rees asked Mr. Wedgwood Benn whether the air driven into the House could be delivered into the Chamber without being passed over steam-heated coils, and the atmosphere diversified in some manner so as to avoid the dead depressing uniformity; and whether in different parts of the Palace of Westminster, for instance in some of the libraries, a cooler atmosphere could be maintained in place of the present highly heated uniformity.

Mr. Wedgwood Benn, in reply, said: The air can be delivered into the Chamber without being passed over steam-heated coils, but as the radiators provide the only means of heating the air it would naturally be at outside temperature, which would not be a satisfactory working condition. There is no difficulty in varying the temperature of the air between certain agreed limits, but I feel that this alteration should receive the support of the House. The libraries are not highly heated, as the temperature records of the room will show. The temperatures are taken hourly and are open for inspection. The temperature can be lowered in these rooms if it is the general wish of members.

Scaffold Accidents.

Mr. Tyson Wilson asked the Home Secretary whether his attention had been drawn to the collapse of a scaffold at Prince Consort Road, Queen's Gate, through which a mason was fatally injured, the coroner's jury finding that the staging was not strong enough for the purpose for which the men upon it were engaged, and whether he would take into consideration the advisability of proceeding with the Building Operations and Engineering Works Bill which was introduced in 1908 in order that effective precautions might be taken to prevent such accidents in future.

Mr. McKenna, in reply, said: I have received a report on this accident, from which it appears that it was due to the faulty construction of the scaffold, and that it would not have occurred if the recommendations of the Departmental Committee on Building Accidents had been carried out. I very much regret that it has not been found possible so far to make any progress with the Buildings Bill, but it has not been lost sight of, and my honourable friend may be assured that I shall do my best to press it forward at the first opportunity.

BIRMINGHAM BUILDERS AND CORPORATION CONTRACTS.

The annual meeting of Birmingham Building Trades Employers' Association was held on November 6th, Mr. William Moffat presiding. It was reported that considerable attention had been given to the question of conditions of contract for building work done for the Corporation. The matter was taken seriously in hand about two years ago, but it was decided, in view of the heavy work imposed upon the City Council and its officials in con-

nection with the Greater Birmingham scheme, to defer approaching the Corporation until the current year. The objects the association had in view were—(1) to secure a uniform set of conditions for all Corporation building contracts; (2) to obtain a fair arbitration clause; and (3) to secure the amendment of some of the conditions to which serious objection had been taken in the past on the ground that they were not equitable between the parties. The suggestion made for a uniform set of conditions had been agreed to on behalf of the Corporation, and the Association were now in close negotiation for a settlement for the exact terms. It was confidently hoped that in the near future conditions would be mutually agreed upon which any building contractor might sign without the slightest hesitation.

Since the interview with the General Purposes Committee of the Corporation about fifteen contracts had been entered into, and in practically all an arbitration clause had been inserted, the payment clause had been altered so as to bring it more in conformity with the suggestion of the Association, and the workmen's compensation and employers' liability clause had been amended so as to limit the responsibilities of the contractor to those which he was legally liable for under the general law. Obviously those concessions had been made without prejudice to the position of either party, but the Association desired publicly to express their thanks to the Corporation committees and officials concerned for the reasonable attitude they had assumed in dealing with the matter, pending the final settlement of the uniform set of conditions.

NEWS ITEMS.

New Business Premises in the Haymarket.

A new building in the Haymarket has just been completed for Messrs. Burberrys from designs by Mr. Walter Cave, F.R.I.B.A.

Change of Address.

Messrs. Ransome-ver-Mehr Machinery Co., Ltd., have moved from Caxton House to larger offices at Brunswick House, Matthew Parker Street, Westminster. Their telegraphic address and telephone number remain unchanged.

Cost of the Town Planning Conference, 1910.

From a balance-sheet published in the last number of the "R.I.B.A. Journal," we learn that the Town Planning Conference, which was held in 1910, cost the Institute no less than £2,195.

A Pennell Exhibition.

An exhibition of the etchings and lithographs of Mr. Joseph Pennell will be held at the galleries of the Fine Art Society, 148, New Bond Street, next month. The collection will be a very complete one—the first on any such scale held in London. It will include the recent important series of lithographs executed by Mr. Pennell to illustrate the construction of the Panama Canal.

Marble Craft Lodge of Freemasons.

In the announcement, in our issue of November 6th, of the first ordinary installation meeting of the Marble Craft Lodge of Freemasons, which is to be held at the Hotel Great Central, Marylebone Road, London, N.W., next Wednesday, November 27th, it should have been mentioned

that W. Bro. Frederick Reeves will vacate the chair, W. Bro. Percy C. W. the Senior Warden and Past Master of Crouch End Lodge, being the Master Elect. *Australia's New Capital.*

An illustrated lecture on the planning the new capital of the Australian Commonwealth will be delivered to-day at 5.30 p.m. by Mr. W. R. Davidge, F.S.I., A.R.I.B.A.M.I.C.E., at the offices of the Cities and Town Planning Association, Gray's Inn Place, W.C.

Winter Gardens and Baths Scheme Plymouth.

The Plymouth Town Council have adopted recommendations of the Committee that a portion of the West Estate be purchased for £8,000. The proposal is to erect winter gardens and baths on the site. Opposition, however, is going in the town against the baths part of the scheme.

Partnership.

Mr. A. C. Dickie, who was recently appointed to the Professorship of Architecture at Manchester University, has entered into a partnership with Mr. J. Burroughs Scott, who formerly carried on practices at 23, Old Buildings, Lincoln's Inn. His practices will be amalgamated, and will in future be conducted under the title of Dickie and Scott, at 10, Gray's Inn Square and at the University, Manchester.

COMING EVENTS.

Thursday, November 21.

Incorporated Institute of British Decorators.—Mr. Arthur S. Jennings, "The Decoration of Small Houses," Painters' Hall, Little Trinity Lane, E.C., at 8 p.m.

Architectural Association.—Conversations at 8 p.m.

Leeds and Yorkshire Architectural Society.—Presidential Address by Albert E. Kirk, A.R.I.B.A.

Monday, November 25.

Architectural Association.—Mr. Horatio Cubitt, A.R.I.B.A., P.A.S.I., "The Prosaic in Architecture," at 8 p.m.

Tuesday, November 26.

Royal Society of Arts.—Dr. W. Warren, M.Inst.C.E., on "The Hardwood Timbers of New South Wales," John Street, Adelphi, at 4.30 p.m.

Wednesday, November 27.

Edinburgh Architectural Association.—Demonstration in ironwork by Thomas Hadden. (Associates' Meeting.)

Institution of Municipal Engineers.—W. Valentine Ball, M.A., Barrister at Law, on "The Effect of Recent Decisions under the Arbitration Clause," 4, Southampton Row, W.C., at 8 p.m.

Thursday, November 28.

Sheffield Society of Architects and Surveyors.—Mr. J. C. P. Toothill on "Visit to Bath." (Students' Meeting.) Concrete Institute.—Mr. John M. Thibald, F.S.I., on "Bills of Materials for Reinforced Concrete Work," at 7.30 p.m.

Architectural Association (Cambridge Sketch and Debate Club).—Exhibition of Sketches.

Friday, November 29.

Birmingham Architectural Association.—Mr. Lawrence Weaver, H.A.R.I.B.A., on "Small Courtyards and Houses of To-Day."



THE INTERIOR OF THE

(From a Drawing)



CONSTANTINIAN BASILICA, ROME.

(C. R. Cockerell.)

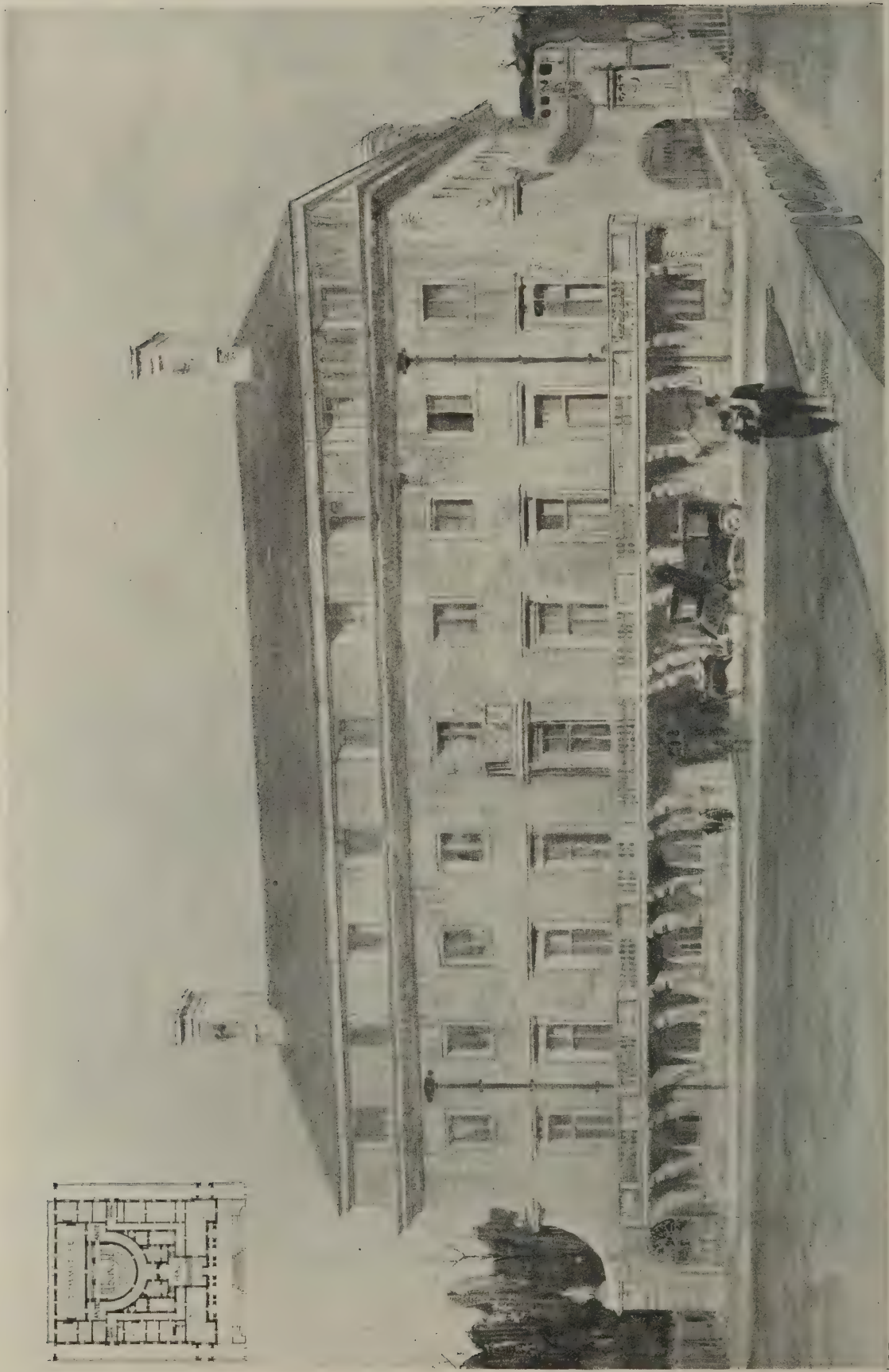
THE
ARCHITECTS' & BUILDERS'
JOURNAL.

Wednesday, November 27th, 1912.

Volume XXXVI. No. 932.



(From Piranesi.)



THE GLAMORGAN COUNTY HALL, CATHAYS PARK, CARDIFF: REAR ELEVATION. · E. VINCENT HARRIS AND THOMAS A. MOODIE, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

NOVEMBER 27th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 932

The Suburban Garden.

Of the whole realm of that shadowy art known in America as Landscape Architecture there is no more perplexing and refractory subject than the suburban garden. The Americans themselves have dealt with it by making it turn Socialist—the garden wall or fence, that social barrier, does not exist, and the public has the use, at any rate with its eye, of the whole site. It is difficult to say whether this represents a state of civilisation more advanced or more primitive than ours. It has been suggested that it is merely a vain reflection of the free land out West; if this is so, it will be interesting to see whether the failure in the supply of free land is to be followed by a tendency to individual enclosure. But with us, however much we may be likely to become indebted to American architecture, there does not seem any prospect of effacing our insularity sufficiently to do without the Tory privacy of our be-hedged and be-walled suburban gardens.

If orderliness of behaviour alone were the mark of a good Tory, these gardens must be called excellent, for nothing can exceed their neatness: the grass plot is shaved as close as a young man's chin and every imperfection, daisy, plantain, or dandelion, scrupulously removed; each flower is severally tended and tied to its stick, so that it looks as self-conscious as if it were posing to a photographer; the gravel walk shows not a blade of grass and the privet hedge that tops the low wall and cast-iron railing is cut with admirable precision. The most formal devotee could not complain of picturesqueness in this direction. But the fine flavour, the quality of the past, is lacking. The gardening of the old manor house, whether in the seventeenth or eighteenth century, shows us a very different scheme, most respects the direct opposite of the jobbing gardener's; the walks and flower-beds were of a formal and regular shape, but the flowers were a luxuriant mass, growing in an apparent but in reality a studied confusion, enclosed within a sharp ruling of box edging. The gardens of the suburb at Hampstead—and such gardens are perhaps its greatest achievement—have shown us that this old manorial gardening can be used to-day for moderate-sized plots, from a quarter to one-eighth of an acre. Here may be seen in place of the cheap patriotic trio, geranium, daisy, and lobelia, the lupin, larkspur, monkshood, columbine, mullein, hollyhock, evening primrose, campanula, pink, and many more. In piquant contrast to these aristocratic family names at Hampstead can be detected a faint emulation of American democracy, not with the total abolition of hedges, but with their reduction to little more than a symbol of privacy.

In the treatment of our larger suburban gardens there is a frequent heresy to which architects and even landscape architects themselves must frequently plead guilty. We are so used, in our town growths, to the recognised practice of sweeping the landscape clean and building on an empty site that to a large extent we have lost the faculty of appreciating the natural characteristics of a district; even where detached

houses are being built the individuality of the site is ruthlessly done away with. For example, the top of a hill, which has recently come within the clutch of the tentacles of a town, is covered with a natural growth of gorse, heather, stunted silver birches, and hawthorns. In a few years' time nothing of this growth will be visible except perhaps on a vacant plot or two; everywhere else it has been sedulously rooted out, the light sandy soil has been replaced by some richer compost, and in it are set laurels, privet, and moribund aucubas, those three depressing shrubs. It is of no consequence that the hilltop be windswept and singularly unsuited to their growth—they form the indispensable background for the geranium, the daisy, and the loelia.

Near by the hilltop is perhaps a pine wood; here the natural characteristic is so marked that it has been preserved. It is scarcely to be imagined that any one would buy a plot in a pine wood, and straight cut down every tree to obtain an open site, garnished with shrubs. But the same deference to local character should have preserved the individuality of the other part; in fact, our attitude to the site should be rather Greek than Roman, at any rate, in the suburbs. At the centre we can remove mountains if we will, and balance terrace with terrace to achieve some architectural conception, but as the town merges into the country let us study the contours and let the suburbs develop in sympathy with surrounding nature.

The urban garden a few yards square, must be treated very differently from the suburban; its smallness of size precludes any "manorial" gardening, and its "site sympathy" is with the street. It must be regarded primarily as an enlarged window-box; there can be no continuity of growth about it, no perennials coming up year after year. Even grass should be sown fresh every spring, as it is in the courtyards of many continental hotels. The method of gardening must be of a highly intensive sort; tulip bulbs must be set so close that when they come out there is a sheet of bloom framed in with flagged walks; tulips in their turn giving place to masses of begonias and so on. It is possible with a scientific preparation of "pockets" beforehand to grow *Lilium auratum* five feet high in a sunny front garden fifteen feet wide. Another suitable form of gardening is that which the Italians are so fond of, flowers and shrubs grown in pots and tubs. We are wont to raise a few spring bulbs for the house in pots, but it is possible to have a complete out-of-doors garden in pots filled with bulbs, annuals, herbaceous plants, roses, and creepers, and with the help of a little trellis a square-bricked town garden is complete. The garden in pots has this advantage, that the whole thing can be cleared away in winter and the more delicate plants can be easily protected from summer storms. It has been many times proved that window boxes can succeed in the grimmest town, and if window boxes, why not the whole garden, similarly treated? The one thing to be avoided is sticky black earth, whether seen between blades of grass or in an expanse of bed through which perennials attempt to thrust their daunted heads.

P. A.

The Removal of Westminster Hospital.

LONDON is always in a state of flux; so that the places and the buildings which served the needs of yesterday must necessarily suffer alteration or extinction in order to meet the demands of to-day. On Sundays the churches of the City now find themselves stranded in the midst of empty houses, their occupants fled to suburban areas; and thus Wren's structures remain as cherished memorials of centuries past rather than as temples of a present religious activity. The hospitals also have felt the results which have been wrought, and are ever being wrought, by the growth of London. At the present time King's College Hospital is building itself a new home at Denmark Hill, where it will be better able to serve those for whom such an institution is intended; and now Westminster Hospital is to go, though its destination is not yet declared.

No regrets will be felt at the disappearance of the existing building, which is in the pie-crust Gothic manner of the last century; in fact, its demolition will have the good result of enabling a fine new building to be completed, for, as is well known, the Wesleyan Hall is at present shorn of its two towers by reason of rights to light and air possessed by Westminster Hospital.

Westminster, it should be noted, was the first hospital in London to be established on the basis of voluntary contributions. It began in 1715 in a small house in Birdcage Walk, was transferred to larger premises in Chapel Street in 1724, and nine years later was removed again to James Street, where it remained until the erection of the present building in 1834. Incidentally the removal to James Street gave London an additional hospital, for the change was objected to by certain of the governors, who seceded and established the St. George's Hospital at Hyde Park Corner. Proposals for the rebuilding of this latter have been on foot for some time past, and we shall expect to hear soon that the present building is to be pulled down and replaced by a modern hospital. It is only by visiting successive a hospital, say, of the middle of the last century and a new building by a good hospital architect—such as the Bristol Royal Infirmary extension by Messrs. H. Percy Adams and Charles Holden—that the great superiority of the modern building becomes so markedly apparent.

The Arts and Crafts Exhibition.

A PRIVATE VIEW day is not the best time to visit an exhibition; hence, we were rather unfortunate in happening on Saturday last to walk around the Grosvenor Galleries in order to see what the Arts and Crafts Society had been providing for their tenth exhibition. The crowd prevented anything like a complete survey of the works shown, but even a fragmentary study of them revealed the fact that some excellent craftsmanship was here to be seen. The exhibition certainly seemed to us to be the best which the Arts and Crafts Society have yet got together. The craft-work still of course bears the same general character that has distinguished it in former years, but it is now very largely free from the taint of crankiness which, in our view, is so undesirable. Certain pieces of furniture bear witness, however, to the fact that the farmhouse and mediæval village model is still regarded in some quarters as the proper thing to adopt in a modern house, and Sir Galahad and his followers maintain their romantic course in not a few decorative exhibits; while the dainty preciousness of a few others serves to keep alive the unreality of another school of workers. But these are passing criticisms. Of genuine craftwork there is abundance, and it is work, too, which one can honestly admire. It displays many a charm of form and happy fancy in ornament, and on that account especially is most attractive. In another issue we hope to say a little

more of the work in detail; but meanwhile we would record our general appreciation of an exhibition which all architects should certainly visit.

Memorial to Lord Lister.

SURELY if ever a man deserved to be honoured that man was the late Lord Lister. We need therefore, with great satisfaction that an Executive Committee of the Royal Society and the Royal College of Surgeons is now concerning itself with the question of a memorial, which is to be of three-character, comprising (1) a tablet with medallion and inscription in Westminster Abbey; (2) the erection of a monument in a public place in London; (3) the establishment of an International Lister Memorial Fund for the advancement of surgery, from which either grants in aid of researches bearing on surgery, or awards of recognition of distinguished contributions to surgical science, should be made, irrespective of nationality.

It will be seen that two of the three divisions are architectural in character, and we hope that, as regards the monument, a competition will be held: a competition, too, open to the world, for though Lord Lister was an Englishman, the whole universe claims him as a saviour from human suffering.

The Two Schools.

EDUCATION being no less important to the architect than to every other professional man, it is interesting to note the underlying principles of the architectural instruction which is given in this country at the present time. Setting aside the miscellaneous instruction afforded in most of the large towns, there may be said to be two kinds of schools: the one (bulking the more prominently, though not necessarily being the more influential) based on English domestic work, the other taking Classic work as its model; the one concerned largely with simple construction, the other devoting itself chiefly to the consideration of architectural design. There can be no doubt that the first teaches its own class of work admirably, but, starting with such a basis of simple brick and timber construction, the whole outlook of its school is limited. In the other type of school construction is considered as the technique of design rather than the inspiration of it. As we understand it, the view is that design is the spiritual side of architecture and can be best approached by studying the gradual accumulation of characteristics which have expressed the aspirations of builders in past ages. Feeling that it is wiser to understand thoroughly one line of thought, with its corresponding mode of expressing it, this second school has selected for its study, and on the basis of its teaching in design, Neo-Classical architecture from Greece to America. In this way it hopes that modern design may grow naturally out of past history and that the motifs which have come down to us through centuries of use shall be ready to our hands. The growth of new motifs, through new needs and new materials, will be like the history of those that have come down to us—also an affair of centuries. They cannot therefore be the invention of any one man, nor can any design which is to be a true reflection of our complex civilisation be started *ab initio*. The history of any art, however, is never an affair of continuous progress. There must always be reactions and revivals; post-impressionist movements towards archaism, simplicity of statement, and times when elaboration of finish and elegance of detail are the desiderata. Looking back on it now one can see that the Arts and Crafts movement in architecture, with its efforts to reduce expression to its simplest elements, was an early phase of post-impressionism, and that the Voysey Cottage was an artistic experiment that had some use in introducing a greater sincerity. Having learnt its lesson, however, we may now return to more normal lines of development.

R. NORMAN SHAW, R.A.: AN APPRECIATION

BY H. H. STATHAM.

VERY one, whether in the younger or the older ranks of the architectural profession, will feel that by the death last week of Mr. Norman Shaw we have lost a remarkable personality and a remarkable influence in English architecture; one who stood alone in his artistic individuality, and whose place cannot be filled up. Latterly he had ceased for some years regularly to practise as an architect, but he was still felt as an influence, not only by virtue of the example left in his executed works, but also because he was known to have been often consulted, officially or otherwise, in regard to important public

new. To some extent we might apply to it Tennyson's lines in regard to his own poetry:—

Now, most can raise the flower,
For all have got the seed.

though perhaps "most" is rather an exaggeration in either case. But he has had the compliment of imitation—sometimes of not unsuccessful imitation. It is only those who are now old who can realise how original, how entirely his own, was Norman Shaw's new departure in domestic architecture. When we went into the Architectural Exhibition or (subsequently) into the Royal Academy Architectural Room

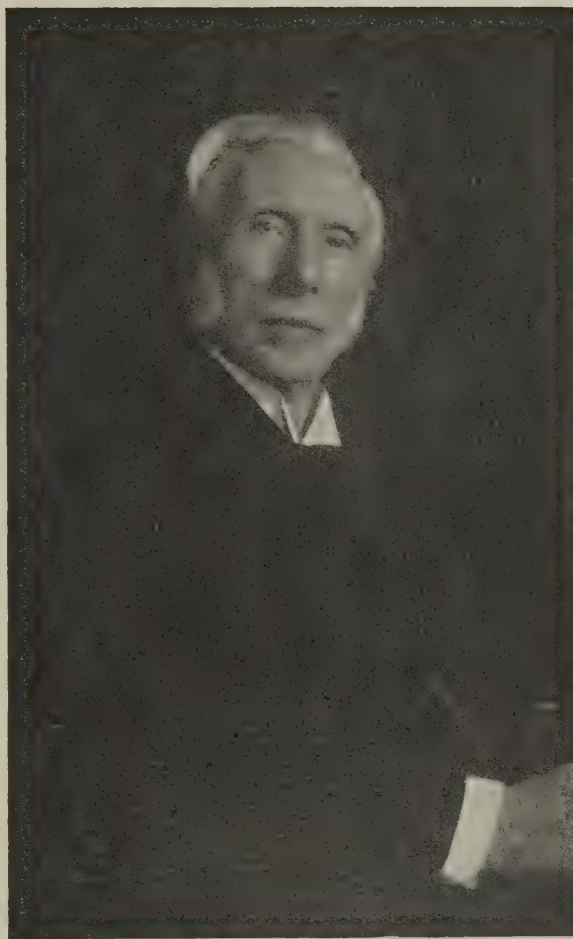


Photo: Elliott and Fry

THE LATE R. NORMAN SHAW, R.A.

works, and has affected for good the designs of buildings in connection with which his name did not openly appear. On this point, in fact, he was chivalrously sensitive, and in some cases in which he is almost certainly known to have given advice or sketches he would never allow this to be stated.

The younger generation of architects, however, can hardly realise what was the interest attaching to Norman Shaw's work when it came to us as something

in those days the first question was: "What has Shaw got this year?" and the bold pen-drawings by his own hand were as interesting, as completely the leading things of the year, for their original and picturesque design as for their fine draughtsmanship. His special mission in architecture seems to have been to show us that domestic architecture and street architecture might be made poetical without losing sight of practical requirements and convenient planning, and that the

materials of architectural design were susceptible of new treatment and combination. A little irregularity in the lines of a site, instead of being ignored, would be laid hold of and made use of as the basis of a special feature in the architectural treatment. And though those houses were not Gothic in their detail, except perhaps "Cragside," they may be said to have been Gothic in feeling and principle.

Norman Shaw's first important public effort was the production of his fine folio volume of "Architectural Sketches from the Continent," published in 1858, which at once gave him a reputation, and which is an example of the fact (in spite of all that may be said as to architecture not being the same thing as drawing) that a great and successful architect has usually been a man who in the first instance could draw architecture well. There are exceptions, no doubt, in both directions; there have been splendid draughtsmen who never got a building to carry out, and there have been great, or at all events highly successful, architects who never could draw well. But, in modern times, as a rule, fine drawing has been the prelude to the production of fine architecture. The remarkable point in Norman Shaw's case was that his great publication in drawing did not in the least prefigure the style of his works. Burges's sketch-books were full of Early French detail, and his executed works are pervaded by French influence. Shaw's published book of drawings was mainly illustrative of the best and most orthodox Gothic; yet, so far as I know, he never carried out a single purely Gothic building. But he assimilated the Gothic spirit, and it was probably to this influence that we owe his novel and picturesque treatment of the architecture of the English house. Gothic forms he did not imitate, in spite of all his fine and careful drawing of them; but the Gothic spirit had permeated his feeling, and led him towards that happy and unexpected freedom of design which in his hands gave a new interest to modern domestic architecture. And perhaps this is an example of the best possible manner in which the sketching of ancient buildings can influence the design of modern ones.

In later years this picturesque treatment of domestic architecture was occasionally modified. There seem to have been occasions when Norman Shaw became enamoured of the stately orderliness of the Georgian mansion. It was under such an influence, evidently, that the great square-lined solid house at the corner of Queen's Gate and Imperial Institute Road was designed. Externally it has none of the characteristics of his earlier houses; it is almost defiantly sober and symmetrical. Its interest lies in the admirable manner in which the style taken as its model is worked out in all the details. Possibly the wish or the tastes of the client may have counted for something in the style of the house; or more probably the architect felt that a town house, standing on the meeting of two roads at right angles, demanded a different treatment from the freedom of line suitable to a country house where the site was untrammelled by street lines. In any case it is a remarkable example of the dignity of effect which may be obtained from absolute simplicity of treatment and severity of detail.

His contributions to London street architecture display again somewhat differing moods in regard to architectural style and effect. In the building at the corner of St. James's Street and Pall Mall he seems to have been rather influenced by recollections of Belgian street architecture, and produced a building as picturesque and charming as many of those the style of which it recalls, and which is a constant pleasure to the eye whenever one has to pass it. The stone building opposite to it, at the foot of St. James's Street, which he designed in collaboration with Mr. Ernest Newton, has more of Renaissance architecture, and is an admirable piece of masonry detail. Of some recent examples of London street

architecture in which his hand is supposed to be traceable it is difficult to speak positively, as one can only presume to go upon. We were given to understand that he had something to do with the design of the block of buildings in which the Gaiety Theatre is included; and certainly the treatment of the eastern portion of this block, with the first floor windows spaced (as in the Riccardi Palace) with entire indifference to the centres of the ground-storey arches, is a very characteristic of him. But for the two most important recent episodes in London street architecture—the new portion of the Regent Street Quadrant and the front of the Piccadilly Hotel, he was admittedly responsible, and in the Quadrant design he has been a pioneer, if his example is followed, of one of the most important and most needed reforms in London street architecture—the practical assertion that shops should have a monumental basement, and should not any longer, under pretence of demands for show space, be allowed to stand apparently on plate glass. The demand that every square foot of the front of a shop should be of plate-glass is merely the outcome of a senseless custom; it is intolerable that a chance raising the whole character of London street architecture should be sacrificed to supposed commercial interests; I say "supposed," for shopkeepers may possibly learn, in the long run, that an architecturally designed shopfront may prove a greater attraction than a better advertisement than their favourite sheet of plate-glass. The one thing I have always felt about this magnificent piece of street frontage is that the depth of setting back in the upper portion, which undoubtedly has such a fine effect, is not obtained quite the best architectural principle, as the wall is obviously carried on girders within the line of ground-floor arches. I confess to a wish that he had not done this, and had been content with a flatter, more honestly structural, effect. But now that it is done, it is an architectural duty to London that the remainder of the Quadrant should be rebuilt on the same lines; there can be no half-measure between doing that or pulling down Norman Shaw's façade as a piece of vandalism which ought not even to be thought of. As to the front of the Piccadilly Hotel, the idea of setting back the upper portion of the building and carrying that free colonnade across it is a stroke of real architectural genius, resulting in one of the finest modern pieces of street architecture effect to be found. I venture to think, in any capital in Europe, that the manner in which this splendid piece of street architecture has been allowed to be despoiled of its proportions, symmetry, and left lop-sided, merely to serve commercial interests, is a disgrace to the architectural government (if there is such a thing) of London. It is certain that such a proceeding would never have been allowed in Paris. In London it would seem that where trade interests clash with architecture, it is architecture that goes to the wall: and no one cares!

Among his good works as a kind of general architectural adviser must be counted Norman Shaw's treatment of Vauxhall Bridge, which the London County Council seem at last to admit as his, though they were entirely reticent on the subject at the time. One of those who remember the design which the County Council's engineer proposed to put upon us, when the original scheme for a concrete bridge with granite facing was unfortunately put aside for a steel span, can realise what we owe to Norman Shaw for having a steel bridge in which the details are in perfectly good taste.

One of his schemes for public improvement in London is a very important one for the formation of a new and what would be architecturally a very effective place at what is now Piccadilly Circus, but which would extend considerably further eastward than the limits of the present Circus. The Circus, in fact (the "circuit" of which is already destroyed by the number of streets cutting into it), was to be obliterated as such, and t

November 27th, 1912.

open space laid out symmetrically as a parallelogram. His scheme was of special interest to me, as it was the occasion of my commencing a closer acquaintance with its author. For many years I had had only a slight acquaintance with him, meeting him once or twice at garden parties and having one or two interviews with him as an editor, when one day I received, to my equal surprise and gratification, a letter from him saying that he had finished in pencil his scheme for Piccadilly Place, and would be glad to have my opinion on it before he put it into ink. I spent one hour with him over the plans, suggesting one modification, which he did me the honour to adopt, and thus began an intercourse marked by affectionate regard on my part and unvarying kindness on his.

During the last few years he had very poor health, suffering especially from frequent attacks of jaundice, and he told me that he never went out anywhere except when interviews about some architectural scheme obliged him to go down into town. But ill-health did not seem the least to impair his spirits or affect the harm of his conversation and his singularly engaging manner. He was a most delightful talker, his wit and light-winged spirit of satire giving a kind of pungency to his criticisms on art and life; but the satire was perfectly good-natured. His fine house, built for himself at Hampstead, outwardly simple enough in style, was internally a true architect's house, full of interest and beauty. Among its treasures was the large collection of ancient clocks and timepieces, some of great beauty and interest, which he had got together, this being, outside of his art, his special hobby.

It is probably not generally known that Shaw had, a few years ago, the offer of knighthood, which he declined—why I do not exactly know, but I rather gathered that the reason was mainly that he was old and not in good health, and did not care, in the circumstances, to be troubled with it. He may, perhaps, have had (quite excusably) the feeling that the honour was offered rather too late in the day to be as complimentary as it might otherwise have been.

The last honours were paid to his memory at the parish church at Hampstead on Thursday last, when a number of members of the architectural profession assembled at the funeral service. His grave is under a tree in the quiet old burial-ground adjoining the church. *Requiescat in pace.*

A writer in the "Manchester Guardian," whose opinions on architecture are generally well informed, gives the following estimate of Norman Shaw: "The impress he has left on London has been greater than any man's since Nash. At one time it seemed as though he, too, would have the chance to design a big London spectacular effect, first when Kingsway was planned, and, secondly, in the rebuilding of Regent Street. As it is, he has left us no ordered effect, but rather giants like Scotland Yard and the Piccadilly Hotel that tower in the imagination of London. Nash, in the words of the rhyme, found London brick and left it all plaster. Shaw was not in that sense so great a master, but his influence went far to change it from plaster to stone, and, more particularly, to increase the scale of London street buildings. His life went back so far that he heard Cockerell lecturing at the Academy schools, and perhaps in his later life Cockerell's passion for the use of large stones in construction affected his ideas. He differed from nearly all famous architects in the variety of his style. In partnership with the gifted but unfortunate Eden Nesfield he started between a sort of Tudor-Gothic and so-called Queen Anne, but towards the end of his career he did much towards the return of the Classical, which is day by day growing more academic. The Palladian influence—even Piranesi—appeared in some of his latest work. This elasticity, at once his weakness and his strength, was a natural outcome of our eclectic age. It broadened

his great influence over the younger architects, with a result that it has many shallows, and Norman Shaw's faults as well as his virtues are sure of a long lease of life."

Mr. Ernest Runtz, F.R.I.B.A., writing to the "Evening Standard" to explain Norman Shaw's connection with the design of the new Gaiety Theatre, says: "When, in 1900, I settled with the London County Council, on behalf of my firm, Ernest Runtz and Ford, the terms upon which our clients, the Gaiety Theatre Company and the Gaiety Restaurant Company, were to be reinstated instead of confiscated, a minimum sum was specified in the agreement as to the amount to be expended, and, further, that should the County Council require a more costly or ornate design than those submitted and approved by the Council, prepared by my firm, they (the Council) should be responsible for such additional cost. It will be remembered that eight architects, including myself, were invited to send in suggested designs for the treatment of the whole of the Strand improvement, and subsequently the Council came to the conclusion that the western block, to be occupied by the Gaiety buildings, should assume a more costly and more ornate character, thus necessitating the abandonment of the design I had prepared. Steps were taken which I considered inimical to my professional reputation with regard to the designing of the new elevation to the plans prepared (which to-day stand in the main as they were originally designed), so far as the exteriors were concerned, and matters arrived at an 'impasse' between the Council and my firm. I know Mr. Norman Shaw was consulted by the London County Council, and I asked him to grant me an interview so that I might place the facts before him. This he readily granted me without any introduction of any description, and it proved the beginning of the friendship which it has been my privilege to enjoy. Mr. Shaw's resignation from the Royal Academy to make room for a younger man was typical of his great-heartedness, for when he heard the facts I related to him in connection with my troubles, he said, 'If you will permit me to take you by the hand I will do my best to pioneer you through your difficulties, as you are not being properly treated,' the result being that I attended with him before the Improvements Committee of the Council. I was asked whether I would be guided by Mr. Norman Shaw in preparing the elevation, and to this I gladly assented, feeling it to be a great honour to be associated with the doyen of my profession. The matter was therefore practically left to the discretion of Mr. Shaw, with whom my firm were to work so far as the exterior designs of the building were concerned. Mr. Shaw supplied sketch designs from which I prepared working drawings, but the buildings as erected differ materially from the original, as from time to time I submitted certain suggestions to him which he entirely approved, such as the heightening of the corner tower and dome, the additions of the balustrade, and other matters, which, whilst not affecting the individuality of his conception, he came to the conclusion were natural developments."

WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS.

ON pages 576 and 577 of this issue we reproduce a half-inch detail of the front of the Berkshire County Hall at Reading, by Messrs. Warwick and Hall, A.A.R.I.B.A.—this being the sixth illustration in our new series of working drawings by well-known architects.

The building is in the Forbury, and was opened in March, 1911, the design having been selected in competition.

The elevations are treated in a broad, simple manner, relying upon the general proportions for effect

rather than on elaborate ornamentation. They are carried out in red bricks (five courses to the foot), with Portland stone for the ground-floor storey and for dressings. The roofs are covered with tiles specially made according to the Italian method.

CORRESPONDENCE

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents.

Correspondents are asked to be brief and to write on one side only of the paper.

The Area of a Circle.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—It is, indeed, a long time since I read so remarkable a letter as that of "Architect" in your issue for last week, and I can only conclude that he is trying to crack a joke at somebody's expense. The answer to the whole thing can be put in a nutshell. The area of a circle is πR^2 , or, what is the same, $\frac{\pi D^2}{4}$, where $\pi = 3.1416$, and R and D are the radius and diameter respectively. The $\frac{\pi D^2}{4}$ works out, of course, to .7854 D^2 when 3.1416 is substituted for π .

Some quantity surveyors, instead of working out the area on these lines, square the diameter and multiply the result by 0 ft. 9 $\frac{1}{2}$ in. The result is the same approximately as that obtained by using the more accurate rule first mentioned. This latter method is, however, not at all general, even among quantity surveyors.

H. F. WILKINSON,
Assoc. M.Inst.C.E.

Tottenham.

[We must relieve "Architect" of the charge of having essayed a little mathematical joke; the error was purely typographical.—Eds. A. AND B. J.]

"Comparative Costs of Various Methods of Construction."
To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Referring to the article on the above by Mr. Alex. H. Purdie in your issue for November 13, the author gives figures for the values of certain classes of work, but does not give any figures as to the costs of material and labour on which he has based his estimates; hence the latter are useless. You can only decide upon the value by knowing the cost of material and having a thorough practical knowledge of how long the work will take to perform, and the value of work increases as the building rises. Nor do the diagrams help matters, for who would think of building a 2 ft. thick rubble wall, and then having to plug, batten, lath, and plaster it on the inside?—especially at the prices quoted, which should allow for good well-bedded stone walling. Neither is an 18 in. brick wall of any value if this also requires to be treated in the same way to keep back the damp from the internal face. NOR would a practical man think of constructing a hollow brick wall with two 9 in. faces. The costs throughout do not fit with any part of the country that, as a practising architect, I am familiar with, namely, Yorkshire and all counties below (except Wales). I have had good rubble walls 20 in. thick executed at 4s. 6d. per sq. yd., but have never had 18 in. brickwork done at 6s. per sq. yd. and should like to know the cost of these bricks per 1,000, and how many bricks the writer thinks should be laid per day, per man, including labourers—to say nothing of the cost of lime mortar—in order to give the builder a profit on his work.

Next, coming to floors, I should like to know the relative values or the fairness of comparison between 10 in. by 2 $\frac{1}{4}$ in. wood joists spaced at 18 in. centres and

6 in. by 3 in. rolled steel joists and concrete filling (spacings of which are not given); but the prices of each are set down to the last penny, though not correct. How can anyone decide upon the class of floor to adopt without knowing the superimposed loads and spans? In this connection I should like to emphasize that all constructions should be designed and carried out on sound mathematical lines. All loads should be taken to every part of the footings and piers, no matter what class of material is being used, for it is only by doing that one can design safely and economically. An architect should be a constructor first and an artist afterwards, basing the value of his work according to the several requirements, and not with the rule-of-thumb method so often employed at the present time. And each architect should make a special study of the whole of the district in which he is employed, both regarding earth stresses and cost and strengths of building materials easily procurable.

Following on with flat roofs versus pitched roofs, the comparisons given are not in accordance with economical construction. A flat-roofed house can be constructed at less cost than a pitched one. For example, I am building many cottages in a Model Village, and can effect a saving of £14 on each cottage by constructing a reinforced concrete flat roof.

The figures given for partition walls are far out, compared with my experience. At the present time I am having cast and fixed many hundreds of square yards of coke breeze slabs at 1s. 6d. per sq. yard, which slabs are being cast by ordinary labourers at 6 $\frac{1}{2}$ d. per hour on the job. This class of partition I strongly recommend, as it is light, strong, sound-proof, and vermin-proof. I do not intend entering into costs more fully here, but as a crumb of comfort to Mr. Filson Young, correspondent I would add, in conclusion, that I have just completed a concrete cottage designed in every respect to pass city by-laws, containing living-room (with cooking-range), separate bathroom with hot water supplied to bath from copper in scullery, and three good bedrooms, coals, w.c., etc., for the prime cost sum of £89 14s. 11 $\frac{1}{2}$ d.

York.

W. J. SWAIN.

THE GLAMORGAN COUNTY HALL.

WE illustrate on the Centre Plate of this issue a fine drawing by Mr. Walcot of the front of the new Glamorgan County Hall in Cathays Park, Cardiff, and on page 562 we reproduce a drawing of the rear elevation. The building, in reality, has worked out even better than the drawings represent it. It is an admirable piece of modern architecture, for which Messrs. Vincent Harris and Moodie are to be congratulated. The façades are executed in stone. Figure groups by Mr. Hodge add a note of richness to the building, while some good carving by Mr. Broadbent gives relief to the architectural lines.

MODERN SMALL HOUSES.

ESHER PARK, Surrey, is at present in course of development for building purposes; and among the houses already erected is the one by Mr. T. Millwood Wilson which is illustrated by plans and photographs on the opposite page. The walls are finished with cement and sand to a fairly even face, and are distempered a cream colour, with a tarred base. The bricks for the chimney-stacks and around the porch are sand-faced local bricks, and the roof is covered with hand-made tiles of a dark red colour. The loggia is a special feature of the house; it has a vaulted ceiling in concrete. The windows are leaded lights in iron casements, and the boarding in the gables is of elm left untouched.



Garden Front.

HOUSE at ESHER PARK, SURREY



Entrance Front

Photos: Architects' and Builders' Journal.

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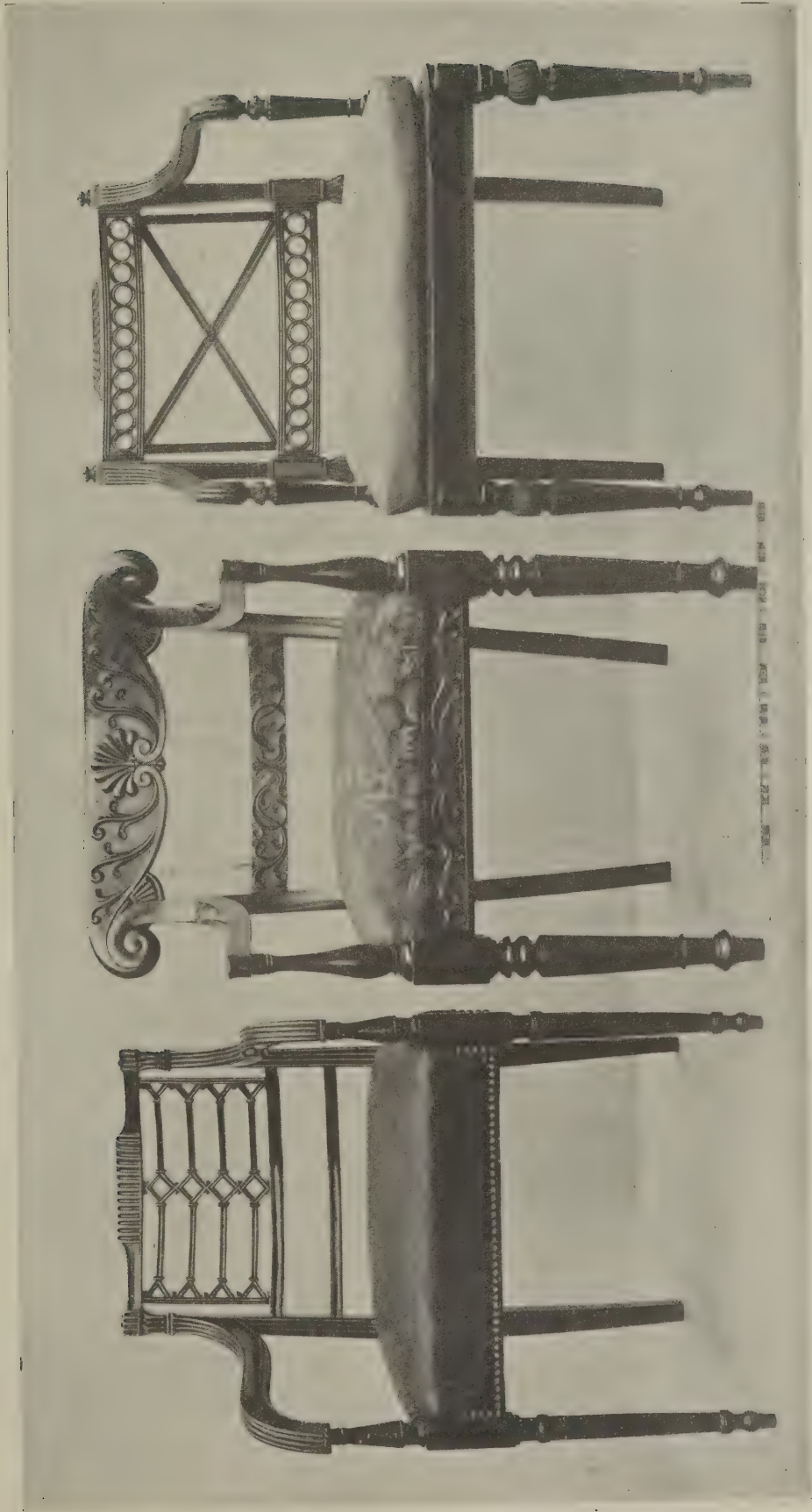
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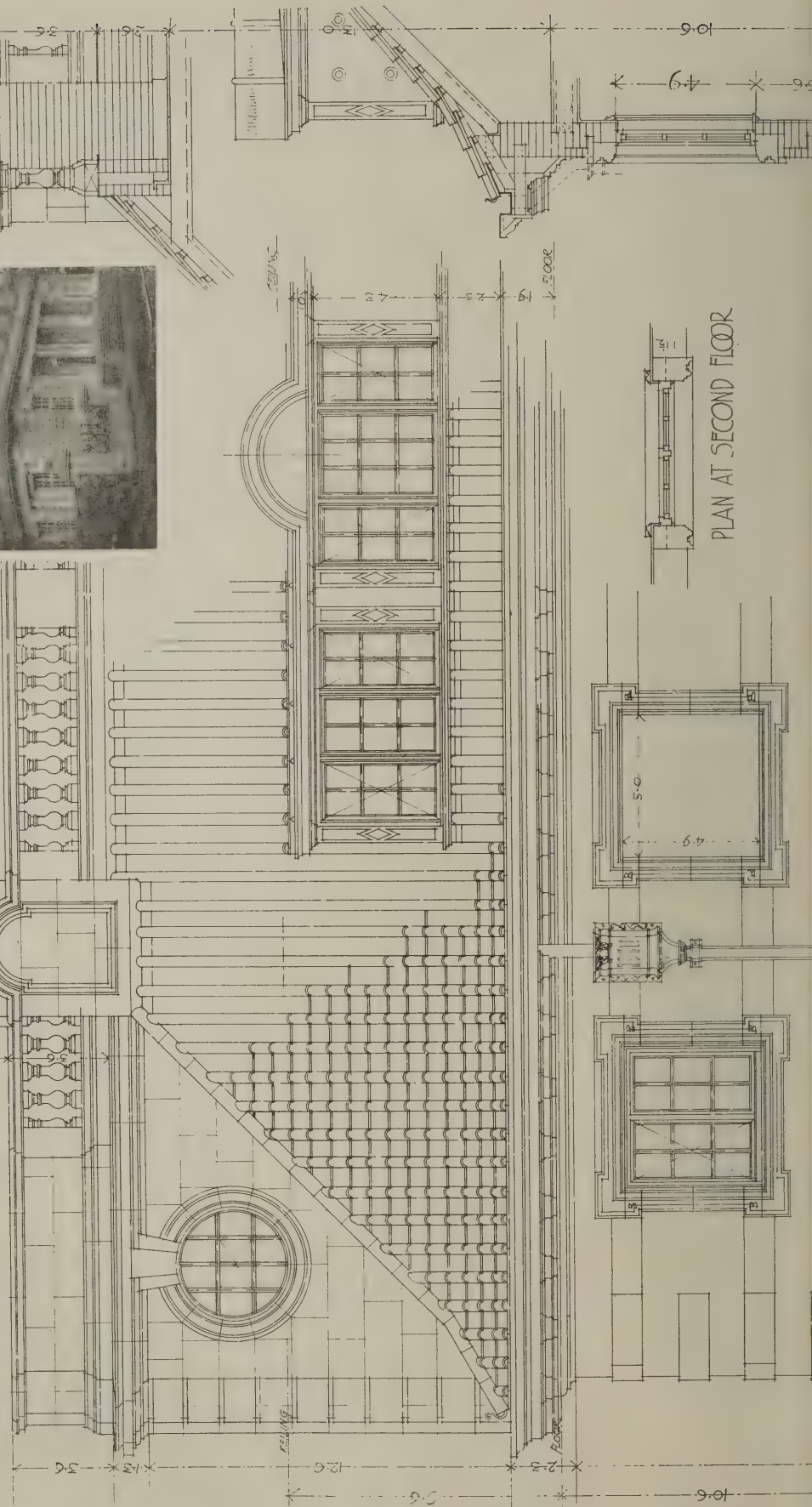
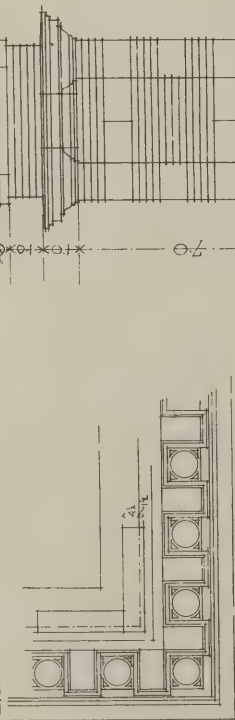
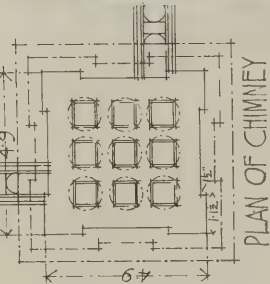
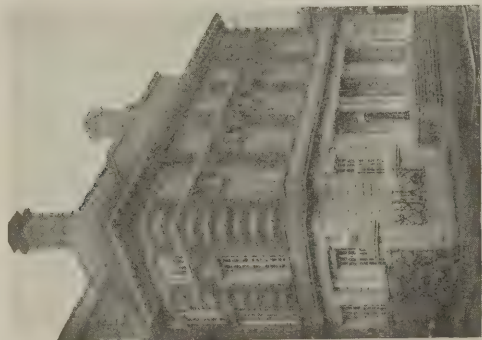
THE ROYAL AUTOMOBILE CLUB, PALL MALL, LONDON: VIEW IN SWIMMING BATH.
MEWES AND DAVIS AND E. KEYNES PURCHASE, F.R.I.B.A., ASSOCIATED ARCHITECTS.

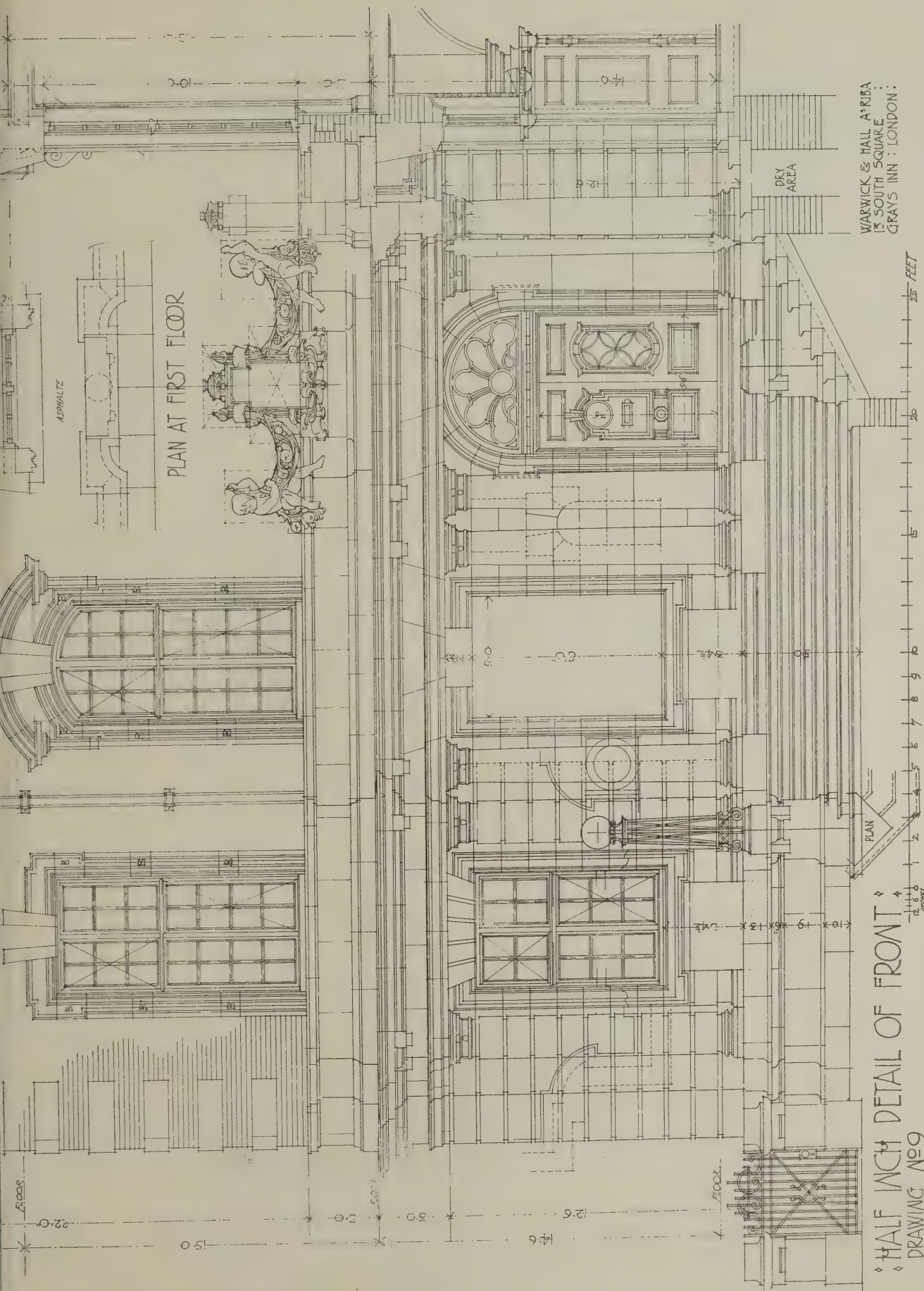
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THREE CHAIRS OF THE ENGLISH EMPIRE PERIOD.

BERKSHIRE COUNTY COUNCIL OFFICES





WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS. VI.—WARWICK AND HALL, A.A.R.I.B.A., ARCHITECTS.



This building, somewhat in the Cockerell manner, was erected in 1876.

PALAIS DES BEAUX-ARTS, BRUSSELS. A. BALAT, ARCHITECT.

MARBLES USED BY THE GREEKS AND THE ROMANS.

BY JOHN A. MARSHALL.

AT the meeting of the Architectural Association held on Monday, November 11th, a paper on "The Marbles used in Greek, Roman, and Byzantine Buildings" was read by Mr. John A. Marshall, who, it will be remembered, was closely associated with the late Mr. J. F. Bentley in the building of Westminster Cathedral and now carries on his practice. As briefly noted in our last issue, the paper was a very long one and did not lend itself to condensation. We have therefore taken only the most interesting portions relating to the Greek and Roman work, which are published below.

The traditional forms of classical Greek architecture demanded that marble should be used in massive blocks, so that it expressed the construction, without being, in the ordinary sense, a decorative material; applied decoration was provided by sculpture and painting. This being so, we can understand why, in the classical age, the Greeks preferred the white marbles of their country to the variegated species. The latter, so much sought after by later generations, were never thought of while the art of Polygnotos flourished, and they were utterly incompatible with Hellenic building construction and design.

Before the Persian invasion common limestone was mostly used for building purposes in Greece; this applied even to Athens, although that city is only a few miles from an unlimited supply of the purest white marble. Later, during the years of comparative peace, the statesman Pericles gave to the public buildings of Athens a crystalline aspect that made the city the most magnificent in Greece. It must not, however, be supposed that this emphatic choice of marble was entirely independent of precedent, any more than the surpassing genius of Phidias, Ictinus, and Mnesicles, was spontaneously developed for the occasion. Long before the time of Pericles marble was used for a part of the Temple of Apollo, at Delphi, and for parts of the temple on the island of Ægina. In Athens itself the early Propylæa of Kimon was partly of limestone and partly of marble, and on the opposite shore of the Ægean the Ionic sixth century temple of Artemis was entirely of marble.

Pentelicon Marble.

For the consummate work of the Periclean period, in Athens, the white marble of Mount Pentelicos was exclusively used. Though brilliantly crystalline, this marble is intercalated with thin seams or ribbons of greyish mica shale, derived from the shaly deposits of the original limestone, and liable to disintegration more than the harder parts. If a piece of the marble is broken along one of these planes, the newly exposed surface, smeared with mica, will clearly show the direction of the strain when the materials were escaping from enormous pressure. Specks of ferric oxide will also be noticed that have been developed just as garnets commonly are in schistose rocks. When exposed to the weather they produce that mellow tint that comes with age, and which all travellers admire who visit the ruins, grand and beautiful in their desolation, on the Acropolis at Athens. In the British Museum the student will find the structural peculiarities of Pentelicon marble clearly indicated by the scarred and furrowed surfaces

of the matchless fragments from the Parthenon.

Hymettian Marble.

The bluish-grey marble of Mount Pentelicos, that overlays the white, was not, I believe, much used by the Greeks, but five miles nearer Athens, on Mount Hymettos, they quarried a white marble streaked with grey. These quarries were probably worked before the Pentelicon, and their close proximity to the city accounts for the prevalent use of Hymettian marble for secular buildings, especially for the steps, pavings, and thresholds. The grey veining of this marble—straight, nebulous, or jagged, according to the direction in which the blocks are cut—was, perhaps, not greatly valued by the Greeks, and when the marble was used for statuary, during the archaic period, no doubt its natural markings were concealed by decorative painting.

Some years ago an inscribed slab of Hymettian marble was found, which proved to be the specification for building an arsenal at Lea, the principal war harbour of Athens. A Greek named Philo was the architect, and the date of the inscription is about 346 B.C.

There is a flavour of the sea about this "document" quite refreshing. I should say, to the archæologist whose time is mostly spent amid the dust of ages. Intended for the storage of gear, sails, cordage, tackle, etc., the building was devoid of architectural refinements, yet it was famous for its great size. Four hundred and five feet in length and 55 ft. in width, it was divided into three aisles by two rows of columns. At each end of the central gangway were doorways with inner vestibules and bronze doors, and in the side walls were small windows with bronze shutters. There are no remains of the building, but we learn from the specification that the walls were to be of local limestone; the vestibules were to have independent ceilings of Hymettian marble, and thresholds of the same material; the doorways were to have lintels and linings of Pentelicon marble; the columns were to be constructed of seven drums of Hymettian, while the capitals were to be Pentelicon.

Parian Marble.

The most beautiful of white marbles is that of Paros, where it occurs on Mount Marpesius, between beds of grey, in shallow streams, limpid and brilliant. Out of it were fashioned many masterpieces of Greek sculpture and thousands of roofing tiles for the temples of Greece. The Athenians built a Treasury of it, by the Sacred Way, at Delphi; so did the Siphnians; and later some of it was used for the monument of Prince Mausolos of Caria.

As an early instance of the use of marble I have mentioned the Temple of Apollo at Delphi, built 530 B.C. It was agreed that this temple should be built entirely of local limestone, but, according to Herodotus, the contractors won a reputation by using Parian marble for the columns of the façade, and declining to make any claim for the "extra." It need not lessen our interest in this statement by the "Father of History" to know that no columns of Parian marble belonging to this temple have been found.

The archaic pedimental sculptures from the Æginetan Temple are of Parian

marble, but, as these were partly painted, we may conclude that the material was used in this instance not merely for its intrinsic beauty, but because it was most suitable for figures possessing a certain slimmness and tenuity, reminiscent of work in bronze.

The little Treasury of the Athenians at Delphi, built just after the battle of Marathon, is, like that of the Siphnians, an invaluable example of Attic art at the time of its transition into the perfect work of the fifth century. From the point of view of our subject it is interesting to note that the sculptured metopes of the frieze are of the finest white variety of Parian marble, while the triglyphs are of the grey and coarser kind.

In Bloomsbury Prince Mausolos of Caria and his consort are familiar figures, as they impassively survey the relics of a monument, once one of the "seven wonders of the world," but if the student wishes to see specimens of Parian marble from this building he must turn aside and examine the fragments of the "chariot frieze" and others in the wall cases of the "Mausoleum" room. The marble used for the main parts of the structure, including the colossal statuary, is not as translucent as the Parian, and it is not scarred by micaeous laminae, like the Pentelicon; it more nearly resembles a marble of the Carian mountains, exemplified by the magnificent fragments in the "Ephesus" room of the museum; and those from the Temple of Athene Polias, Priene, in the "Mausoleum" room. The main parts of his temple were built of a local bluish marble quarried on Mount Mycale.

The Use of Marble by the Romans.

The Romans by their conquests had facilities which they could not resist for obtaining marbles from all parts of the known world. They eagerly quarried and sent to the capital of their empire not only the simple whites and greys of Greece and Italy, but also the coloured marbles disregarded by the Greeks; and it is chiefly to their enterprise we owe our knowledge of the finest species.

Like the Greeks, the Romans were accustomed to build with enormous blocks of common stone and white marble, but they found the process slow and costly, and the builders of the empire practised another, less expensive and more rapid, besides being more daring in conception and lasting in its results. The use of concrete and brick called for decoration that could be applied, and as the idea of applying the "Orders" to façades, in connection with the fenestration, was probably derived from the Hellenistic cities of Asia Minor, so perhaps we may accept the suggestion of the elder Pliny that the Romans derived the art of using thin slabs of marble for decoration from the same cities. The statements that the Palace of Mausolos at Halicarnassus and a chamber of the Mausoleum were plated with marble, may be true, though there is always the possibility that the incrustation was not coeval with the erection of the building. The instances given by Pliny of the early use of marble in Rome cannot be verified from existing examples, yet they are none the less interesting on that account. They take us in imagination to that residential quarter on the slope of the Palatine, overlooking the Forum, where dwelt many of

the rich and influential citizens famous in history.

From Pliny's account it seems clear that the introduction of foreign marbles into Rome was not due to a desire to embellish some sacred edifice or public building, but rather to gratify the private interests of certain officials of the State. After the Roman arms had been carried into Greece, Africa, and Spain, the *adiles* had increased facilities of enriching themselves, and with a view to their election for another term of office some of them did not scruple to expend vast sums on the public games, banquets, and dramatic representations which it was their duty to superintend, besides looking after the streets, sewers, and public buildings. It was in this connection that a certain Lucius Crassus when he came into office saw an opportunity of getting some marble columns over from Greece which he wanted for his house on the Palatine. At this time few, if any, of the public buildings of Rome possessed pillars of marble, and the use of this material by a private individual was certain to be deprecated as savouring of Greek luxury; so, to put a fair complexion on the matter, when the columns arrived they were first "offered up" in the temporary theatre as a decoration or background for the stage.

From the front row of the stalls the Right Honourable Lucius Crassus noted the effect, and when the festivities were over he was in no doubt about the columns, for they were next seen erected in the *atrium* of his house, half a dozen of them, 12 ft. in height, the first monoliths of Hymettian marble imported into Rome.

This happened about 91 B.C. Later, about 58 B.C., another rich *adile*, Æmilius Scaurus, with the instincts of a millionaire and a great fancy for columns, imported 360 that were quite black. For nearly a month these supported the upper stories of a temporary theatre, and then the largest of them, 38 ft. in height, were carted away by Scaurus to the Palatine for the *atrium* of his house.

We need not stay to inquire how columns of such enormous dimensions could be utilised in their entirety for an ordinary house, but we may note that their removal through the narrow streets of Rome was not a light affair. It could not be done by stealth, nor without proper authority, and this "First Commissioner of Works" had to give security for any damage that might be done to the public sewers.

It is not known where this marble came from, because Pliny only names it after Lucullus, a retired general, who greatly admired its funereal tint, and died 56 B.C.

Luna Marble.

Luna marble was undoubtedly used during the Augustan period, and a block has been found with an inscription cut during the reign of Tiberius. The marble was also known as "Ligurian," from the ancient district in which it was found. The nearness of the quarries to the sea facilitated the transport of the blocks to Rome. Fine in grain, and with only a small "percentage of iron in its composition, this white marble does not, like the Pentelicon, readily get bronzed by exposure to the air, although after an experience like that of Trajan's Column and the Arch of Constantine it does get to look a little seasoned or mature. The drums of Trajan's Column, about 12 ft. in diameter, and of its counterfeit in the Piazza Colonna, are of solid blocks of Luna marble, in which the winding stairways are hewn.

The white marbles of Luna and Athens were used impartially by the Romans for

columns, entablatures, and wall linings. The well-known circular temple in the *Forum Boarium* is of solid blocks of Parian marble; this marble was also used, according to Procopius, for the stupendous Mausoleum of Hadrian.

Hymettian marble was used for paving the *peribolus* of the Temple of Faustina, in the *Forum Magnum*, and antique columns of this marble, fluted and unfluted, are to be seen in the Churches of St. Sabina, St. Pietro in Vincoli, and Sta. Maria Maggiore. The columns on each front of the Arch of Severus are of Hymettian marble.

Excepting the grey and black marbles, most of the coloured species known to the Romans have been identified; they were named after the places they came from, and hundreds of roughly hewn blocks, many engraved with the name of the quarry and of the *procurator* who managed it, were discovered some years ago in an ancient *emporium* near the *marmorata*, or landing-stages, on the banks of the Tiber. Most of these blocks, I regret to say, have been cut up for the churches of Rome.

From the inscriptions collected and explained by an Italian priest, Father Bruzza, much information has been obtained about the origin of the marbles and the way in which they were brought to the capital. The quarries belonged to the Emperors, and in the course of time the number of convicts employed in them became so great that in Trajan's reign a special administration had to be formed to look after them. Each quarry was managed by a steward or *procurator* of the Emperor, who had under him numerous officials. The blocks, before being shipped off, were usually numbered, and frequently marked with the name of the reigning Emperor and that of one of the officials in charge of the quarry. Shiploads of marbles were continually being sent from the ports of Greece, Asia, and Africa. At the port of Ostia, near the mouth of the Tiber, the Government had an administration to receive the blocks, which were then forwarded in smaller vessels to the *marmorata* at Rome. To convey monolithic columns and obelisks vessels of enormous size were specially constructed. One of these "empties," like the Roman galley recently found in the Thames, is still in existence at Ostia, where it was utilised by the Emperor Claudius for the foundations of a harbour. It is now impossible to realise the quantity of marbles sent to ancient Rome, but it impresses one to know that there is scarcely a church or a palace without columns and wall linings taken from the ruins of the city. Then we must not forget that enormous quantities were burnt into lime in the Middle Ages, and broken up for concrete, and the hard white stucco used by the architects of the Renaissance.

The coloured marbles used by the Romans are not only more complex than the marbles used by the Greeks, but there are so many varieties of each species that the mere accident of colour cannot be taken as a standard for classification by the student who wishes to have more than a superficial knowledge of the subject.

BAKERLOO EXTENSION TO PADDINGTON.

The extension of the Bakerloo line from Edgware Road to the Great Western terminus at Paddington is making rapid progress, says a writer in a recent issue of the "Evening Standard."

Work was commenced last January, and

both running tunnels, each about three-quarters of a mile long, have now been "driven." There remains the laying of the permanent way and the installation of the electric power cables, signals, and ventilating fans. The excavation of Paddington Station is now in hand, and it is expected shortly after the New Year to commence installing the escalators, which will connect the Bakerloo platforms with the Great Western station. The whole of the work will, it is hoped, be completed by next Easter. The "Greathead" shield has been employed throughout the construction of the tunnels. The shield is circular in form, with a knife edge, and is a little larger than the bore of the tunnel. It is moved forward a distance of 20 in. at a time by hydraulic pressure at 2,000 lb. per square inch. After each forward movement the clay is excavated in advance of the shield, after which the cast-iron segments are hoisted into position, and bolted up into their permanent strongholds. The annular space between the back of the segments and the clay is filled in with "lime grout," under pressure of 60 lb. per square inch. The shield is again forced forward 20 in., and this operation is repeated.

LEGAL.

Litigation over a Small House.

In the Sheffield County Court on November 7th a case came before his Honour Judge Benson, in which Mr. F. Houlton Wrench, A.M.Inst.C.E., Lic. R.I.B.A., of Sheffield, sued Mr. Edward Baxter, cashier, of Uppertorpe, for £42 19s., professional charges for preparing designs for a house. Plaintiff's case was that in October, 1911, defendant told him he was thinking of taking on lease a plot of land in Redcar Road for the purpose of building a house. Plaintiff entered into negotiations on his behalf and drew up an estimate for a house to cost about £700. Defendant however, intimated that he wanted something cheaper. Plaintiff pointed out that it would be very difficult, if not impossible, to get what he desired for anything like £500 to £550, the sum mentioned, but promised to do his best to cut down the cost. The design was therefore amended, and, plaintiff said, was subsequently accepted by the defendant. Tenders were then invited. The lowest tender received was £880 from good builders. Plaintiff obtained further tenders from other builders, reliable but less costly. The lowest tender then was £575—within £25 of the figure aimed at; but, to plaintiff's intense astonishment, defendant made up his mind that he would not proceed with the matter any further, and he would not pay anything, not even the costs incurred with the quantity surveyors. The quantity surveyors thereupon commenced an action in the Leicester County Court against plaintiff, alleging as the basis of their action that plaintiff was defendant's agent to instruct them in quantities. They, however, lost their action.—The defence in the present case was that plaintiff had shown want of judgment, or that he had gone on expressly disregarding defendant's instructions. Defendant denied that he gave plaintiff instructions to get new tenders.—His Honour said the plaintiff could not be accused of unskilfulness or want of knowledge. He had done nothing outside his proper position as an architect. He found therefore for plaintiff for the amount claimed.

SOME REFLECTIONS ON BATH AND WELLS.*

BY J. L. BALL.

I PROPOSE to offer some brief comment on Bath, and, incidentally, Wells, cities well known, easy of access, at no great distance apart, possessing between them a fine series of architecture of different schools, the diversity of which invites fruitful comparison. It is as a Roman sanatorium—*Aquae Solis*—that Bath emerges from the region of fable. The remains of the Roman baths—a small fragment only of the *Thermae* which, with temples and gymnasia, once covered, so antiquaries tell us, more than seven acres—are nevertheless the most considerable relics of Roman architecture in Britain, and to the student of that architecture, striving to piece together his odds and ends of knowledge, to bring all into focus—most valuable. Indeed, to come upon these remains, not under a southern sky, but in our own pastoral Somerset, is to receive a fresh impression of Roman power and fortune. It is surely with no ordinary emotions that we see and touch the very walls, the very columns, which were built in remote Britain in the second century. From these *vestigia*, these large foot-prints, the stature, even the features, of Hercules may be inferred; we perceive the strength of the giant, and the coarseness. And so, wandering amidst ruined walls and fallen columns, among the fragments of sculptured stone now sheltered in Brydon's graceful peristyle, all that we know, or have heard, of Roman architecture seems to acquire an instant reality; its strong lineaments, at once stern and ornate, self-reliant and luxurious, grow more distinct.

The Romans at Bath.

The coarseness of Roman architecture is not an accident but an essential of it, a masculine grossness and predominance, which also has a place in art. For this hardness, this coarseness of fibre in it, is not a negative quality only, as implying no more than the absence of refinement, it is an energy, a faculty; so that while Roman architecture was often clumsy and unimaginative it was never puerile or trifling; this *fortuna virilis* kept it free from the effeminacy which spoiled so much work of the Renaissance, and especially kept it true to a grand tradition of scale, Roman architects, for instance, never forgetting the dignity of the Order, never degrading it to a toy, as some later architects of Bath did, notably in the *Circus*. And coarseness here has such an intimate and immediate connection with endurance that it becomes really a sort of exaggerated emphasis of strength. Strength in all forms was the true divinity of the Romans, their genius was for construction, they thought and worked always for eternal durability. Here, in Bath, violence and the hand of time have not obliterated, nor much impaired, their massive basements. What stone-work is this which alone of all the masonry in Bath shows no evidence of decay? What is the secret of this concrete, this mortar, made without Portland cement, yet still hard and impenetrable as rock? The conspicuous durability of Roman architecture makes most later work seem temporary in comparison, and adds pathos to its ruin.

For a city which is the seat of an ancient bishopric the mediæval record in Bath is

scanty. It might almost seem as though, in the quaint partnership of the two cities, the illustration of the Gothic phase of architecture had been left to Wells. Not the cathedral only, but the whole aspect of Wells, preserves the spirit of the middle ages. In those narrow streets of gabled houses, the little market-place, the gateways and closes, the cathedral with palace and college—all clustering together there among the wooded Mendips—in all these things, and in the ecclesiastical air of the place, and in a certain neat compactness which it has, and in the gossip and leisure of little-town life, there still lives for us something of the true atmosphere of mediæval art. But nothing of this atmosphere exists in Bath, where the Abbey church stands alone, in a sort of priestly isolation, the last word of Gothic art in a city of the Renaissance.

Bath Abbey.

Bath Abbey was begun in 1499, replacing earlier structures; was partly ruined at the Dissolution, and partly rebuilt between 1597 and 1616. Thus it belongs entirely to the decadence of Gothic architecture, and has for us something of the mournful interest of a survival; as of one who, having outlived his contemporaries and friends, yet lingers, a stranger in a changed world. For by the middle of the sixteenth century the drama of mediæval art was played out. That architecture which meets us at Wells Cathedral in the flush and animation of a wonderful youth, with the air of spring about it, we find at Bath Abbey in the last stage of a no less wonderful decline; beautiful still, with the beauty appropriate to winter. In Wells Cathedral throughout, not the sculpture only, but every line of the architecture, is intense with life; life triumphant, life contemning death. But in Bath, in this city of pagan memories, it is the pagan sentiment which finds expression in the last words of Gothic art. Everybody knows those strange representations of the Dance, or Triumph, of Death, which one meets here and there in the painting and sculpture of the later middle ages, grotesque works, full of a haunting sense of the weariness and futility of life, of the greatness of death. Bath Abbey recalls such works, for here we find architecture expressing, in its grave, monumental way, the same ideas. In these rigid, attenuated forms, from which fire and passion and energy have departed, we see the composure, the high indifference, of death.

And, quite in accord with this, there is in Bath Abbey a curious felicity and smoothness of *technique*. The vaults are the best of fan-vaults, the proportions, at least of the interior, faultless. We feel that the end is achieved; the fancy, the invention, the experiment, of three centuries of Gothic art, seemingly inexhaustible, have come by inevitable steps to this, and terminate here, in this chill perfection.

The Roman and the mediæval cities of Bath are gone, or survive only in profoundly interesting fragments. But the famous Renaissance city of the eighteenth century has a different claim on our regard—it exists. We still walk the streets, still pass in and out of the buildings, which are associated with a crowd of brilliant and attractive people, and with creatures of the imagination hardly less real. The Assembly Rooms, the Pump Room, Milson

Street, the Parade, the Crescent, are much the same to-day as when Miss Burney's and Miss Austen's and Sheridan's lively personages played their parts on the background of this architecture, itself almost a branch of literature, with qualities of the intellect rather than of the emotions; but nevertheless possessing, quite apart from its historical associations, and from the literary fragrance which clings to it, a real charm and distinction. Here, in Bath, the Renaissance of the eighteenth century has no claim to creative genius; we must not look in it for the expression of great ideas, the pride of dominion, the ecstasy of the religious life; nor for passion, nor for mystery; its virtues are all social, domestic. It is the architecture of an age which was quick and critical, but not very imaginative or profound. It is the architecture of fine manners and courtly phrases, the reflection of a sparkling and highly finished existence passed amid much dancing and music; the classical sentiment of the age pervades it, the Dorian mood "of flutes and soft recorders."

So, then, in this Renaissance city of the eighteenth century the spirit of Roman decorum is revived; its streets and open places, and the order of its public and private edifices, were civic interests, and we have an architecture austere and sober, devoted to the classic ideal, and with little of the romantic in its mood. And yet with all this, and with much of grace and interest, there are mingled in this architecture some characteristic defects, defects which must be understood if we are to appreciate its real merit. A certain sterility marks it, as though some hidden influence were obstructing its development. The century offered a clear field to the classical Renaissance; yet when we compare the architecture of 1800 with that of 1700 we perceive little progress or variety. In all architecture there is the tendency to variation, but the degree of variability differs extremely in different schools. Gothic architecture, Wells Cathedral for example shows a variability, a readiness to "sport," which is really astonishing; we can imagine it capable of variation almost without limit. Other schools of architecture are variable in different degrees, and here in Bath, in the classical Renaissance of the eighteenth century, we reach the extreme of a low degree of variability.

Adaptability of Renaissance.

There is hardly any kind of building to which Renaissance architecture has not proved adaptable, from the greatest to the least, from the basilica of St. Peter to the small houses and shops which we see here in the streets of Bath. And this quality in it of adaptability is characteristic, for it is the serviceableness of an architecture whose temperament is somewhat detached and cold, which is distinguished by no very strong idiosyncrasy. When we come to compare this architecture of mild and rather homely sentiments with the architecture of passion and genius—with Wells Cathedral and Gothic architecture in general—the value of adaptability becomes very evident. Gothic architecture, with all its abounding variability, its intense and flame-like imagination, is wholly without adaptability. Do we doubt this? Do we need to remind ourselves of the disaster of the last century—the effort, supported by so much enthusiasm, to adapt the

*Extracts from a paper read before the Royal Institute of British Architects on November 18th.

solemn architecture of the religious ideal to commonplace and secular uses?

In the larger and smaller houses of Bath, and especially perhaps in the interiors, we have not only the finished thought of eighteenth century architecture, but the true measure of its originality; for it was just here, where the Roman model failed them, that the artists of the time became various and inventive. The cultured simplicity of these interiors—these dainty parlours and staircases—is admirable, and one is conscious sometimes of an almost *feminine* quality in the delicate proportions and cameo-like reliefs. About this eighteenth century architecture of Bath there still lingers the charm of an old-world refinement. No architecture has been more severely criticised, and doubtless it has its faults. Let us rather seek to emulate its virtues, its antique decorum, its frugality of ornament, its *civility*—the subordination of personal whim to a civic interest.

Discussion.

Mr. Mowbray A. Green, proposing a vote of thanks, touched upon a number of points not dealt with by Mr. Ball. He gave the dimensions of some of the chief thoroughfares and open spaces, proving that Bath could easily stand comparison with the more celebrated Continental cities.

Mr. L. March Phillips, seconding the motion, said he thought that the lecturer had made his subject humanly interesting—a very difficult thing to do. Professor Blomfield, he said, had called architecture the Mistress Art, but it was also the Mistress Industry. Architecture to-day was cut off from the life of the working people, with the result that craftsmanship was more or less mechanical.

Professor W. R. Lethaby said that although Bath was perhaps the only real city we possessed, we failed to value it as a national asset. He suggested that the city was worthy of some national recognition. If Bristol was considered fit for a university, surely Bath should not be overlooked. It would be a splendid place for the erection of an agricultural college for the West of England.

Mr. George Hubbard differed with Mr. Ball in his conclusion that architecture influenced the life of the times. He believed that the reverse was the case. We were not so cultured as we might be, and our architecture suffered in consequence. Bad as it was to-day, he thought that it did really represent our unfortunately low standard of civilisation.

Professor Blomfield, in putting the vote of thanks, said, with reference to the remarks of Mr. Hubbard, that our architecture was not so wholly bad; indeed, there were distinct signs of vitality. It should be remembered, he continued, that Roman architecture was really the foundation of modern architecture, and he still believed that the finest training for a young architect was the study of buildings at Rome. Not only was Bath the first thing of its kind in England, but it could hold its own with the great Continental cities, and he did not think it wise to underrate our own possessions. Deep down in the eighteenth century were the roots of the Romantic movement, and it was rather unsound, historically, to describe the architecture of the period as dull and mechanical. Mr. Ball, however, had performed a very difficult task with conspicuous success; he had penetrated beyond the screen of facts to the dim obscurity of the forces beneath.

Mr. Ball made a brief reply.



BUILDING FOR THE UNITED STATES MARINE CORPS, PHILADELPHIA, U.S.A.

RANKIN, KELLOGG AND CRANE, ARCHITECTS.

ENQUIRIES ANSWERED.

National Health Insurance.

CORRESPONDENT writes: "A contract was entered into on November 24th, 1911, for the construction of certain works: A bill of quantities formed part of the contract. No mention is specifically made that the contractors are to provide for the carrying out of the provisions of the National Health Insurance Act, which came into force on July 15th, 1912. The contractors now claim that their expenses on the contract due to this Act must be paid for as an extra charge.

"One clause in the contract has reference to the insurance of the workmen, and is headed 'Workmen's Compensation Act, and Insurance of Workmen,' and provides the contractors shall insure each workman employed on the works in an insurance office to be approved by the owners in an amount to effectually indemnify the owners from and against the payment of compensation or other payments whatsoever, under the Workmen's Compensation Act, 1906, or otherwise, and shall pay or cause to be paid all premiums respecting such insurance.

"Could the contract clause quoted be held to include Health Insurance? If not, are the costs to be borne by the contractors as one of their risks, or are they entitled to an extra charge?"

—In answer to the first question the clause quoted from the contract cannot be held to include for Health Insurance.

In answer to the second question, according to an opinion obtained from counsel, in the absence of any express provision enabling the contractor to pass on to the employer any increased cost due to the above Act, it is thought such increased cost must be borne by the contractor; but in the case of variations in which daywork may be charged and no labour schedule was incorporated in the contract it is thought the contractor would obtain payment of what would in substance amount to an increase in wages. Daywork is in effect payment by prime cost and profit, and the payments under the Act are clearly part of the prime cost.

Whatever the legal position may be, there can be no doubt that equitably the contractor ought to be given some consideration; there was much uncertainty in the public mind as to whether the Act would come into force in 1912 or be postponed, and in the absence of any item in the quantities, the contractor, in competitive tendering, could hardly be expected to insert a provision which his competitors might or might not also insert. The very fact that the contract made provision for Workmen's Compensation Act Insurance but omitted to do so for the National Insurance bears out the view that both the parties to the contract failed to appreciate the position, and it would therefore appear that they should now come to some equitable compromise thereon. A. G. W.

Carey's Roofing.

Referring to the enquiry under this head on page 532 of our issue for November 13th, Messrs. the Ruberoid Co., Ltd., of London, E.C., write: "We notice that you say you are unable to trace the name of the manufacturers of Carey's Roofing. We beg to advise you that this material is manufactured in America, and to the best of our knowledge is not sold in the United Kingdom. It is a smooth-faced roofing similar to Ruberoid, and was placed on the American market to com-

pete with our own product. The nearest thing to Carey's Roofing that can be obtained in this country is Ruberoid, and we think your reader would find it even more satisfactory."

Responsibility for Connecting to New Sewers.

FAIRPLAY writes: "Various owners of a rural parish were, by reason of a new system of sewerage, recently called upon by the R.D.C. to connect with the new sewers, although they had previously had overflows from cesspools and privies connected with the old parish sewers. Claims for compensation to meet the cost of making these connections have been made, and in two instances have been paid by the Council; the other owners, however, are advised, 'that upon receipt of proof of claim the matter will receive further consideration.' (1) Can the R.D.C. compel owners of property to connect with a new system of sewerage if they had originally had a satisfactory system such as a cesspool or vault which was properly attended to and did not cause a nuisance? (2) What is meant by 'Proof of Claim,' as detailed statements of the actual cost of the work and builders' vouchers have already been submitted? (3) Under what Act or order can claims in respect of the cost of connecting to a new sewer be made?

—(1) The Local Sanitary Authority have powers, under Section 23 of the Public Health Act, 1875, to compel an owner to connect to their public sewers provided that the house in question is "without a drain sufficient for effectual drainage" and that the site of it is situated within a hundred feet of the sewer. I am of opinion that an owner cannot be compelled to connect with the sewer.

(2) I am at a loss to understand what further proof the R.D.C. require, beyond the fact that the work has been done in accordance with their requisition and that the amount of the expenditure is correctly vouched for. I should be inclined to write to them, making a formal claim for the repayment of the sum expended, giving them a reasonable time to deal with the matter, and handing the matter over to my solicitor to take action at the end of that time.

(3) Section 24 of the Public Health Act, 1875, provides that, "where any house within the district . . . has a drain communicating with any sewer, which drain, though sufficient for the effectual drainage of the house, is not adapted to the general sewerage system . . . the authority may, on condition of providing a drain . . . as effectual for the drainage of the house . . . close such first-mentioned drain . . . and the expenses . . . shall be deemed to be expenses properly incurred by them in the execution of this Act." That is to say, they may compel the alteration, but they must pay for it themselves out of the rates. F. S. I.

ALMA-TADEMA'S HOUSE.

The house of the late Sir Lawrence Alma-Tadema in Grove End Road, St. John's Wood, which is to be sold by public auction on December 5th, was designed and built under the personal supervision of the artist, who is said to have spent £70,000 on the work. It embodies a great number of striking features. Interest begins at the main entrance, the door of which is set in

a bronze frame cast from one at Pompeii. Within, a flight of brass stairs leads to the studio through a door of polished woods, including lignum vitæ, over which is the inscription, "As the sun colours flowers so art colours life." The inner hall, which also has a door communicating with the studio, has its walls covered on three sides by panels, painted for Sir Lawrence by Leighton, Poynter, Boughton, East, Riviere, Marcus Stone, MacWhirter, and many others. This inner hall leads to one of the most interesting apartments in the house—the artist's writing-room, which was designed after the form of a Roman atrium; it has a Pompeian ceiling and onyx window, and is completed by an impluvium with marble fountain and walls panelled in alabaster. But the chief feature of the interior is the great domed studio, 44 ft. in length by 36 ft. in width. The walls are panelled in green marble, and the roof is of aluminium. Opposite the north window, in its bronze frame, is a Byzantine apse, hung with Tunisian embroideries in rose velvet and fitted with a semicircular seat inlaid with ivory. In a deep recess on the other side is the grand piano, for which the artist paid £2,000, with its parchment scroll bearing the signatures of practically every great musician of the day. Overlooking the studio is a gallery surmounting a bronze bas-relief by Reynold-Stephens. Another fine apartment is a seventeenth-century Dutch room, which formed the studio of the late Lady Alma-Tadema. The antique panelling, mantel, open hearth, and old stained-glass windows were brought from Gouda, and adjoining this is a smaller room in the same style, containing a carved and inlaid oak bed dated 1606.

THE RESTORATION OF TATTERS-
HALL CASTLE

Tattershall Castle, Lincolnshire, which Lord Curzon's generosity preserved from transhipment to America, is now being restored under the direction of Mr. William Weir. The work is not confined simply to those parts of the castle affected by the removal of the mantelpieces—the subject of recent controversy—but is the outcome of a thorough survey with the object of ascertaining what was necessary to a complete restoration. The difficulty of securing bricks to correspond closely with those of the fourteenth century necessitated careful observation and experiment. In the end the Lincoln Brick Company have been able to produce a brick in every way satisfactory, hand-made at the Waddington brick kilns. The measurements differ somewhat from those of the ordinary modern brick. They are $8\frac{1}{2}$ in. long, 2 in. thick, and 4 in. wide, while the modern brick measures 9 in. long, 3 in. thick, and $4\frac{1}{2}$ in. wide. For the new work 100,000 bricks have been ordered, 60,000 of which have already been supplied. Although hand-made the manufacture can be effected at the rate of 10,000 a week.

It is interesting to note that another old country seat on the borders of Nottinghamshire and Lincolnshire—Thorney Hall—is about to undergo renovation with bricks of similar dimensions, texture, and colour to those which are being used in the restoration of Tattershall Castle.

The process by which the bricks are made is quite different from the modern method, corresponding very nearly to the process by which the original bricks of the castle were produced. Instead of being



HOUSE AT SHEFFIELD: ENTRANCE FRONT.

BRIGGS AND WOLSTENHOLME AND ARNOLD THORNELLY, ARCHITECTS.

compressed and driven through dies, as in modern brick-making, the clay is specially mixed with sand, ground, and moistened to the consistency of soft paste, and conveyed to a bench, where it is made into bricks by hand. The workman takes a given quantity of the soft clay, places it into a shallow, bottomless mould which lies upon the table, and, pressing it well into box-like shape, completes the process by a final smooth-off with a flat piece of wood. The brick thus formed is conveyed in its mould to the drying room, where it is dropped on to the sanded floor, remaining there until dry and finally being transferred to the kilns, where it is fired.

IN PARLIAMENT.

(By Our Press Gallery Representative.)

The New Delhi.

In the House of Commons last week several questions were addressed to the India Office with regard to the building of the new Delhi.

Mr. King asked whether the report of the Committee appointed to advise on the site and planning of the new Delhi was a unanimous report signed without reservations by all the members of the Committee; whether the report would be published; if its publication was not intended, whether the report recommended that the new Government buildings should be erected in the Italian Renaissance style of

architecture; and whether this advice would be followed.

Mr. Harold Baker, in a printed reply, stated: The report is unanimous and without reservations. It is confined to the selection of a site for the new capital and has nothing to do with the style or architecture of the buildings. The question of publication must stand over until the town-planning committee have completed their inquiries.

Mr. King asked whether it had been decided to adopt the Italian Renaissance style of architecture for the official buildings at Delhi, and whether the adoption of an Indian style of architecture would be considered.

Mr. Baker said the answer to the first part of the question was in the negative. No decision would be taken without giving full weight to the considerations mentioned.

Mr. King desired that the House should have an opportunity of criticising the decision or discussing the matter before it was decided.

Mr. Baker said it was not for him to answer that.

In reply to another question, Mr. Baker stated that the Town Planning Committee which was considering the rebuilding of the new Delhi would reassemble in India next month and would report after the inquiry, which was expected to take about two months, had been completed. The question of the style of architecture was outside the scope of the inquiry.

HOUSE AT SHEFFIELD.

The house of which illustrations are here given has been erected for Mr. James Neill, of Sheffield, on a very commanding site in the Fulwood district of Sheffield, the ground having a slope to the south-east. The sitting-rooms face towards the south-east and south-west, and obtain good views of the surrounding country.

Up to the first-floor level the building is faced with local stone from the Bell Hag Quarry. Above that height, cream-coloured cement roughcast has been used. The situation being much exposed, the walls have been built with a cavity. The roof is covered with stone slates from Brighthouse, matching very closely the colour of the stone walls.

In laying out the garden great care has been taken to make it harmonise with the house and form a part of the general composition. Two long terraces run across the south-east front of the house, and are connected by means of steps, which in turn form an approach to a central path, with an old oak tree forming a termination. The terrace walls are of rough local stones, into the joints of which rock plants have been planted.

Both gardens and house were designed and carried out under the superintendence of Messrs. Briggs, Wolstenholme, and Thornely, F.F.R.I.B.A., of Liverpool. Messrs. Backhouse and Sons, of York, carried out the garden work, and Messrs. London and Sons, of Sheffield, were the contractors for the house.

RAILWAY STATION ARCHITECTURE.

A modern criticism of Ruskin's views on railway stations is given in the special architectural and structural number of "The Railway Gazette," dated September 27th. Ruskin, it will be remembered, in his "Seven Lamps of Architecture," said of the railway traveller: "Carry him safely, dismiss him soon; he will thank you for nothing else. All attempts to please him in any other way are mere mockery, and insults to the things by which you endeavour to do so. There never was more flagrant or impertinent folly than the smallest portion of ornament in anything concerned with railroads or near them." Unfortunately, says our contemporary, even in these days of travel, everyone who sees a station does not travel by train. "It is quite true that ninety-nine travellers out of every hundred would prefer a quick and smooth journey in a well-equipped restaurant-car train

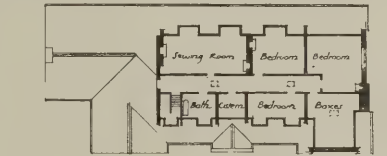
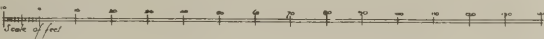
from one ugly station to another ugly station, to a journey in a slow and badly lighted train from one architecturally beautiful station to another architecturally beautiful station. But he won't grumble if both the stations and the train are a credit to the railway. . . . Much rubbish is sometimes published lamenting that the design of such and such a station has been left to the railway company's chief engineer instead of employing an outside architect. People who make these complaints generally don't know much of the facts of the case. Even when the title of architect does not figure in the list of a railway's chief officers it does not follow that there are not several very capable architects attached to the staff of the chief engineer. For really a station, be it a *station* or a *station*, is first a traffic proposition, secondly an engineering proposition, and thirdly an architectural proposition. When a new station has to be designed the traffic department should have the biggest say in the matter. They have to

run the station, and they don't want to have to run a white elephant. They should first make rough plans showing what running lines and bays they want, what width of platform, what booking halls and luggage halls and parcels offices, and so forth and so on. Then the engineer's department should work out these plans in detail. The architect's department would then see how the whole scheme could be made to conform with the company's standard trade-mark architecture. The engineer would then submit a detailed cost and time estimate to the general manager for submission to the board. A similar procedure should be followed in the design of goods stations and railway offices. The people who really have to run the show should have the first and last say."

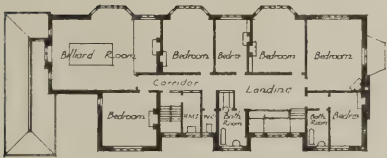
VANDALISM AT CHRISTCHURCH, HANTS.

The secretary of the Society for the Protection of Ancient Buildings, writing to "The Times," says: "The great mediæval church of Christchurch, Hampshire, is well known, and any damage done thereto must be considered little short of a national calamity. A faculty from the Bishop of Winchester, dated March 9th last, gave power to the vicar and churchwardens to carry out certain well-defined alterations to the internal fittings of the church. In his printed appeals the vicar stated: 'There will be no destruction of ancient work,' and 'no ancient work will be interfered with.' In spite of such assurances and under cover of the Bishop's faculty, which gave no consent for it, much ancient work has been interfered with in a disastrous and unnecessary manner. The north transept has been much pulled about, a great quantity of new stone has been inserted in the west wall, to the destruction of original Norman work. Portions of arcading that remained in that wall have been 'restored' and Norman shafts from elsewhere have been mutilated and inserted. On the eastern side of the transept a new stone wall has been built, blocking up the stairway leading to the eastern chapel from the north chancel aisle. New stairs have been inserted below the southern arch opening, from the said chancel to the transept. The Norman arch leading from the transept to the north chancel aisle—one of the few vestiges left of the Norman choir—has been much tampered with, its northern side having been, without any necessity, practically refaced with new stone and the plaster and original stonework destroyed. The opportunity of re-setting the encaustic tile pavement of the north transept (recently discovered) has been neglected and many of the fragments removed to the vicarage or left on rubbish heaps. "These are but a few examples of the damage wrought in the last few months, and many examples in the last few years might easily be cited. Work on the church is still proceeding. . . . These vandalisms (quite apart from the damage done to a glorious national monument) call for the strongest public condemnation, and yet the Bishop of Winchester is proposing to visit Christchurch on the 29th inst. to give his official benediction to the work. "Besides the foregoing, a scheme may soon be on foot to 'restore' the Lady Chapel by means of a large sum of money left for the purpose by one whose connection with Christchurch was of the slightest.

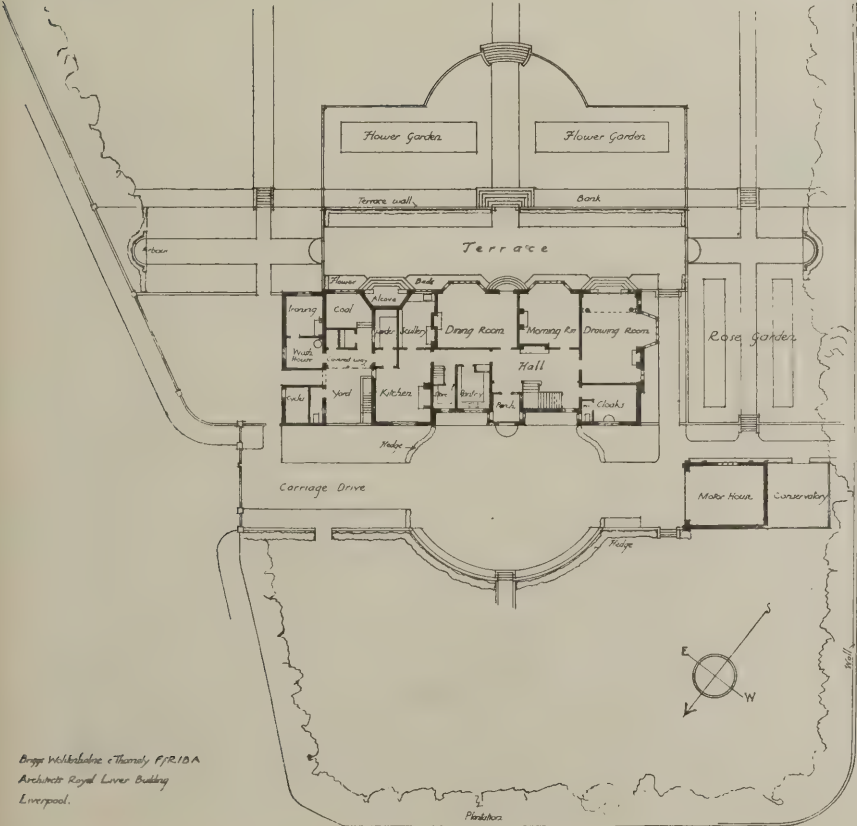
HOUSE AT SHEFFIELD FOR J. NEILL ESQ.



SECOND FLOOR PLAN



FIRST FLOOR PLAN



By Mr. W. H. R. Thompson, F.R.I.B.A.
Architect, Royal Liver Building
Liverpool.

It is no exaggeration to say that in the case of a building like Christchurch its value decreases whenever money is spent upon it for purposes other than necessary repair. Here, nevertheless, is a scheme involving the expenditure of thousands of pounds on restoration which will do little but depreciate its value as a national monument. Surely it is time that the nation obtained proper protection for its treasures and antiquities."

COMPETITIONS.

Elementary School, Beckenham.

In the competition for the above the assessor's award is as follows: 1st, Messrs. Buckland and Haywood Farmer, Birmingham; 2nd, Mr. W. J. Hayle, Sheffield; 3rd, Messrs. Bivan and Fletcher, St. Helens.

A Town-Planning Competition.

The Institution of Municipal and County Engineers have instituted a competition for laying out a town as a seaside pleasure resort, with a present residential population of 50,000, and with additional accommodation for 100,000 visitors. Premiums of 10, 7, and 5 guineas are offered to members and associate members, and of 5 and 3 guineas to students of the Institution. The drawings have to be sent in by July 10th next.

LIST OF COMPETITIONS OPEN.

NOVEMBER 30. SWIMMING BATH, BALHAM.—This is the extended date for the reception of designs in this competition, which are to be sent to the Town Clerk, Council House, Wandsworth. Conditions (£1 is.), Mr. P. Dodd, Surveyor to the Borough Council, M.Inst.C.E., 215, Balham High Road, S.W.

DECEMBER 1. ROYAL PALACE AND LAW COURTS, BULGARIA.—Architects desiring to take part in this competition should communicate with the Commercial Intelligence Branch of the Board of Trade, Basinghall Street, E.C.

DECEMBER 2. SCHOOL BUILDINGS, CARLISLE.—Particulars, City Surveyor, Carlisle.

JANUARY 1, 1913. EXTENSION OF MUNICIPAL OFFICES, DUBLIN.—The competition for the enlargement of Dublin Municipal Offices, in Castle Street, is restricted to practitioners in Ireland. The cost is estimated at £55,000, and the author of the selected design will supervise the work. Second premium, £150; third, £100. Latest day for conditions, December 2. Apply Municipal Offices, Dublin. Deposit £2 2s. Mr. Albert H. Murray, A.R.H.A., has been appointed assessor.

JANUARY 31, 1913. MUNICIPAL BUILDINGS, KINGSTON, JAMAICA.—To be of reinforced concrete and to cost £9,000. Particulars (price 2s.) from Alexander Young, Ltd., 60, Fenchurch Street, London, E.C.

FEBRUARY 3, 1913. COUNCIL SCHOOL, HARROGATE.—The Borough of Harrogate Education Committee invite designs for an elementary school for 675 children. Particulars, C. E. Rivers, A.M.I.C.E., Borough Engineer, Harrogate.

MARCH 1, 1913. MUNICIPAL BUILDINGS, RANGOON.—The committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars £1 (returnable) may be obtained from the London Agents, Messrs. Ogilvy, Gillanders, and Co., Sun Court, 67, Cornhill, E.C.

JANUARY 1, 1913. APARTMENT HOUSES, BELFAST.—The Corporation of Belfast invite designs for 126 houses of two apartments each, and 126 houses of three apartments each, to be erected in Belfast. Premiums, £25, £15, and £10. Mr. Henry Seaver, B.E., architect, Belfast, and Mr. H. A. Cutler, M.Inst.C.E., City Surveyor, will act as assessors. Conditions from the City Surveyor on payment of £1 is., returnable. Designs will be received up to January 1st, 1913.

NEWS ITEMS.

A New Allied Society.

The Council of the Royal Institute of British Architects have admitted the Hampshire and Isle of Wight Association to alliance with the Institute.

English Corresponding Members for Austrian Architectural Association.

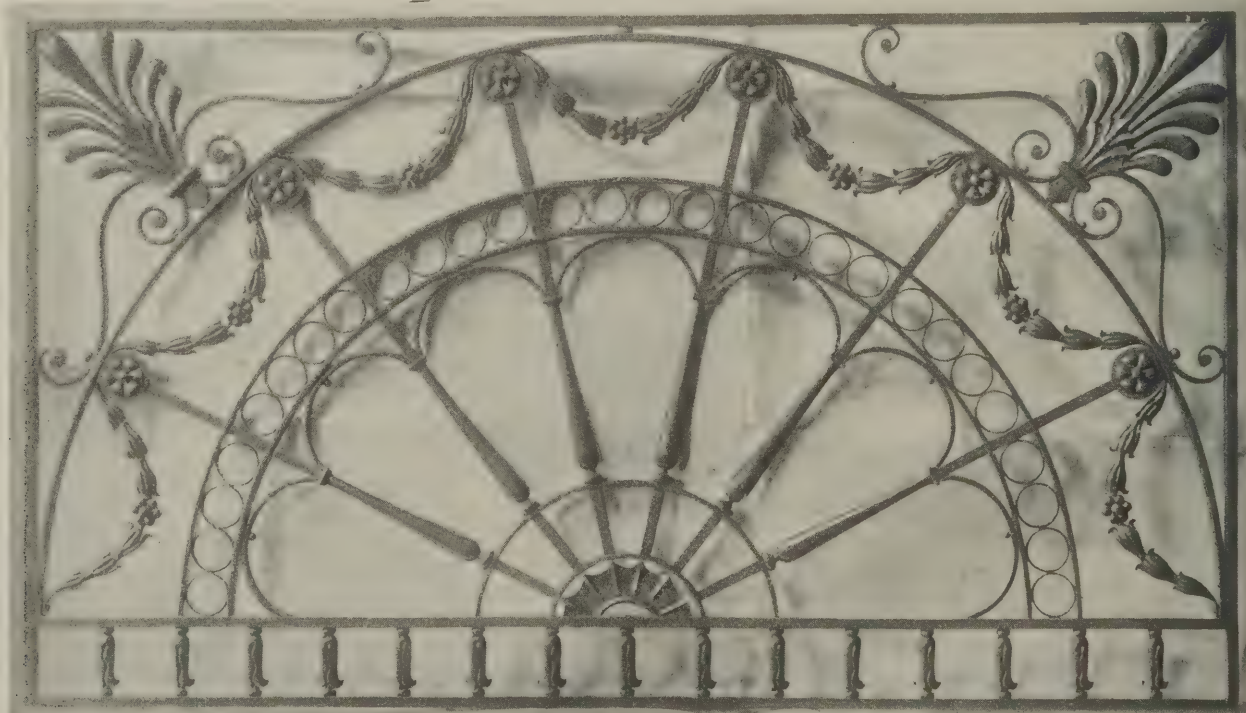
The Central Association of Austrian Architects, Vienna, has appointed twenty-six architects as corresponding members, among whom are Mr. John W. Simpson, F.R.I.B.A., and Mr. Leonard Stokes, F.R.I.B.A.

Memorial to the Late Lord Salisbury.

A memorial to the late Marquis of Salisbury has just been placed in the Salisbury Chapel of Hatfield Church. It is the work of Sir W. Goscombe John, R.A., and comprises a recumbent figure in bronze of Lord Salisbury, in the robes of Chancellor of Oxford University, with the chain of the Knighthood of the Garter, the crossed hands on the breast clasping a crucifix.

Edinburgh's New Masonic Hall.

The new Freemasons' Hall in George Street, Edinburgh, has now been formally opened. It has been erected at a cost exceeding £30,000 on the site of the old hall from designs by Mr. A. Hunter Crawford, F.R.I.B.A., of Edinburgh. The base of the building is of Aberdeen granite and the upper part of freestone, the front section comprising four floors and basement and the back section consisting of a large hall and basement. The main hall affords accommodation for about 750 persons and is lined to a height of about 14 ft. with cream coloured marble from the south of France, the portion above being covered with French stucco. It has an organ that cost £1,200. Immediately below the hall are a supper-room and a smoking lounge which, by means of sliding oak partitions, can be converted into one room. A



WROUGHT-IRON GRILLE TO DOORWAY OF A HOUSE NEAR CAMBRIDGE. RICHARDSON AND GILL, ARCHITECTS.

staircase formed of marble steps, with wrought-iron balustrade, leads to the first floor, on which are situated the Grand Lodge offices. On the second floor are three large committee rooms and the library and museum, and on the top floor are storerooms and hallkeeper's rooms.

Board of Architectural Education.

Appended is a further list of names of candidates whose designs for a "village church" have been approved: G. E. Charlewood, H. W. Hallas, A. E. Lowes, and William Voelkel.

A.A. Athletic Club Dance.

The Architectural Association Athletic Club dance, which has been during the past three years one of the chief social attractions of the Association, is to take place at the Wharnccliffe Rooms of the Hotel Great Central on December 2nd, from 9 to 2.30. Particulars may be obtained from Mr. G. D. Gordon-Hake, assistant hon. secretary of the dance committee.

Halifax Architects' and Builders' Complaint.

A deputation of local architects and builders waited on the Halifax Corporation Improvement Committee last week with the complaint that their business was often delayed by the fact that the committee now met only once a month. After the deputation had retired the committee discussed the matter and decided that urgent requests for the approval of plans, made in writing, should be considered and dealt with by the chairman, vice-chairman, and borough engineer.

SOCIETIES AND INSTITUTIONS.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

President's Address.

The opening general meeting of the Leeds and Yorkshire Architectural Society was held on Thursday last, when the President, Mr. A. E. Kirk, F.R.I.B.A., delivered his inaugural address, in the course of which he referred to the question of

Registration.

Mr. Kirk said: The right note in regard to registration has been struck, I think, by Professor Reginald Blomfield, who says: "A sound and thorough professional training is the basis on which any form of registration must be founded. If we are to obtain public and formal recognition of the fact that architecture is not an art that can be practised by Dick, Tom, and Harry with advantage to the community, and that there is a difference in kind between the work of the trained designer and the architectural efforts of the gentleman who combines the practice of architect, auctioneer, and estate agent, we shall see to it, not only that our present standard is maintained by all who enter our ranks, but also that it is slowly and surely raised, so that there can be no question as to who is or who is not qualified to undertake the work that legitimately falls to an architect."

The Institute is pledged to the policy stated in the report of the committee of 1907, but very little headway has been made during the last four years. Of course, I know the subject bristles with difficulties, but many converts are being made every year. We in the provinces have perhaps felt the necessity more than the London men, but I am glad to think they are coming over by degrees. The

new council have appointed a large and carefully selected committee to consider the whole question, which committee includes, I am glad to say, a number of representatives from the provinces, and I sincerely trust that their deliberations will bear early fruit.

The Allied Societies.

A circular letter from the R.I.B.A. has been sent to all the allied societies stating that the Council are anxious that the control and supervision exercised by the allied societies all over the country should be as complete as possible, and that some of the provinces allotted to them are too large and that their organisation cannot adequately deal with more than a certain area. They also draw attention to the fact that there are a large number of members and licentiates of the Royal Institute who do not belong to the allied societies, and the Institute asks for suggestions to improve this condition of affairs. With regard to our own society, a fair number of Fellows and Associates who reside in our area are members of the Society, but the percentage of Licentiates is not so good. The figures are as follow: Fellows, 25 members, 45 not; Associates, 35 members, 10 not; Licentiates, 16 members, 62 not. Leeds I think is well situated as a centre for the majority of the towns represented. If it is proposed to create additional allied societies, I would suggest that Yorkshire should follow the Ridings, which would then be as follow: York and North Riding, Hull and East Riding, Leeds and West Riding. In order to obtain more supervision and influence over the provinces it would seem necessary that all members of the Institute should become members of the Allied Societies. In the case of Fellows and Associates, I do not think there would be any opposition, because the R.I.B.A. refund their subscriptions, but with regard to the Licentiates there may be opposition, unless the Institute can see their way to refund the necessary subscriptions, which I think they most certainly should do. There is a feeling abroad, I know, that many of the provincial members obtain very little benefit from their membership of the Institute, and I think something might be done to allay this feeling—say by conferring certain grants to the Allied Societies.

LIVERPOOL ARCHITECTURAL SOCIETY.

The Original Drawings of Whitehall Palace.

At last week's meeting of the Liverpool Architectural Society Mr. J. A. Gotch, F.R.I.B.A., read a paper on "The Original Drawings for the Palace at Whitehall, attributed to Inigo Jones." Mr. Gotch said that until recently it was supposed that James I. commissioned Inigo Jones to design a huge palace at Whitehall, of which the banqueting hall formed but a very small part. The original drawings for the palace were preserved at Worcester College, Oxford, and Chatsworth House, but they had never been collated. Lately, however, the drawings had been photographed and compared with each other, the results of the detailed scrutiny showing (1) that the banqueting hall was erected as a separate and independent building; (2) that the palace was designed in later years, and so as to include the banqueting hall; (3) that the palace was designed by Inigo Jones's assistant, John Webb. Webb, it appeared, designed the palace by

the direct command of Charles I., given at a time when that Monarch was already in the hands of Parliament, and living either at Hampton Court or in the Isle of Wight, about eighteen months before his execution in front of Whitehall.

SHEFFIELD AS AN ARCHITECTURAL CITY.

Many interesting suggestions relating to the architectural improvement of Sheffield were made by Mr. W. S. Purchon, A.R.I.B.A., in a Saturday-night lecture on "Beauty in Architecture," which he delivered recently at Sheffield University.

Mr. Purchon dealt with many important qualities to be observed in architecture, such as unity of composition, points of concentration, symmetry, proportion, and scale, restraint of ornament and sculpture, selection of materials, and the necessity for buildings to be genuine.

It might be asked, he said, what should be their relationship to architecture? Was it something about which they should read? Was it something they must travel long distances to see? Was it not rather that which they, as dwellers in a city, should see all about them, in their public buildings, shops, factories, and even in their homes? It might perhaps be difficult to light the lamp of beauty in the peculiar atmospheric conditions which prevailed in a manufacturing city. He had heard it suggested, however, that the atmosphere of Sheffield could be improved, and he should not be surprised to find that that was not beyond their skill in these days of engineering efficiency. Would it not be worth much to its citizens if Sheffield were really a beautiful city—a city free from shams and ugliness; a city in which all the streets and buildings were pleasant to the eye and mind? At the present time a visitor to Sheffield, when asked how he liked the city, invariably replied that the country around it was beautiful. Would the visitor of the future, asked Mr. Purchon, ever be able to say it was a beautiful city with beautiful surroundings? Was that an impossible ideal? It was not impossible. It needed, chiefly on the part of the people, a great love of and a great desire for the beautiful. When they as a people were as interested in the beauty of their buildings as they were in sport they would not tolerate ugly cities. Street improvements would no longer be considered only as problems concerned with traffic and the provision of sewers and water mains. The builder of a private house would remember that it was not only for the comfort of himself and his family, but that it was something which would give either offence or pleasure to countless passers-by. That state of things was slowly but surely coming. Already large numbers of people were becoming interested in such questions as town planning and the provision of garden cities, and, incidentally, in beautiful buildings.

Waterproofing a Free Library.

Messrs. Kerner-Greenwood and Co., of King's Lynn, inform us that their patent powder "Pudlo," for rendering cement waterproof, has been specified for the whole of the cement work at the proposed Carnegie Library at Huthwaite. It needs no emphasis that for libraries and buildings of a similar nature, containing valuable books, etc., it is essential for all the rooms to be absolutely damp-proof.

TRADE AND CRAFT.

Beaver Board Panelling.

A convenient and economical material for the covering of walls and ceilings has recently been introduced into this country under the name of Beaver Board. Beaver Board is manufactured wholly from selected woods reduced to fibrous form and pressed into panels of a uniform thickness of about three-sixteenths of an inch. The board is supplied in panels 32 in., 36 in., and 48 in. wide and 6 ft., 7 ft., 8 ft., 9 ft., and 10 ft. long, other special lengths being 12 ft., 14 ft., and 16 ft. Beaver Board may be applied direct to studding or ceiling joists or over plaster, brick, or any other suitable flat surface. The particular advantages urged in its favour are that it may be substituted for lath and plaster and that its use dispenses with the need for wall paper. Cream white in colour, Beaver Board is supplied with matt or pebbled surfaces, which are well adapted to artistic decoration.

The application of this board is extremely simple. First it is nailed up in panels, then painted or distempered, the joints being covered over with strips of wood, which may be polished, stained, or painted according to taste. Beaver Board is easily bent to the curve of an arch or a coved ceiling, and it is proof against cracking, chipping, or deterioration.

If the board is applied direct to studding or ceiling joists it is necessary to know the distance between the centres. For studding centred at 16 in., panels 32 in. and 48 in. wide could be used. For 12 in. studding, 48 in. widths would be suitable, while 18 in. studding is adapted to the 36 in. panel. Should the studding be centred at other widths or irregularly spaced, it will be necessary to insert fuming strips between, so that the board may be nailed on all four edges.

Once erected Beaver Board is said never to require repairing or replacing; the material is permanent, and it actually hardens and improves with age.

The board is perfectly sanitary and vermin-proof, and by the crossing and re-crossing of its fibres it offers the greatest possible resistance to heat, cold, and sound. It adapts itself naturally to varying climates and conditions, having been successfully used in all parts of the world.

The utility of Beaver Board is manifest where it is necessary to gain access to the various fixtures that are customarily

hidden within walls, such as plumbers' work, steam pipes, electric wiring, etc.

The excellent decorative effect to be obtained with Beaver Board may be judged by the accompanying illustration, reproduced from an attractive and informative booklet entitled "The House that Beaver Built." For the re-decoration of old buildings which have become dilapidated, Beaver Board is at once convenient and inexpensive, involving but little trouble in the work of transformation. It has been successfully applied to the walls and ceilings not only of houses, but of shops, offices, hotels, restaurants, schools, factories, sanatoria, churches, bungalows, and innumerable other buildings.

Another form of this material is known as Beaver Tile, which is Beaver Board with the surface blocked off to represent tiles. Finished in enamel, it is well suited for use in bath-rooms, kitchens, laundries, and other places where the tile effect is appropriate.

Complete working instructions for the applications of Beaver Board are enclosed with all consignments. Full information may be obtained from the Beaver Board Co., Ltd., 4, Southampton Row, London, W.C.

*New Edition of "Simplex Conduits"
Complete Catalogue.*

Simplex Conduits, Ltd., Charing Cross Road, London, W.C., and Garrison Lane, Birmingham, have just issued a new and considerably enlarged edition of their complete catalogue, comprising more than 500 pages, and covering all descriptions of apparatus for electric-light and power-supply installations, with the exception of large machinery and generating plants.

The general arrangement of the catalogue is so systematic that anyone consulting it can find instantly the exact item he requires. This easy reference is in part assisted by the clear and logical division of the catalogue into twenty different sections, while the sectional divisional leaves have printed tabs which give the description of the material and the indication letter of the section which immediately follows it. With this aid it is a simple matter to localise the position in the book of any particular object of search.

In pricing up the material full details are tabulated. In the Conduit Section particularly, in which the multiplicity of the types of fittings renders cataloguing a somewhat difficult matter, the method

adopted is that of giving a scale illustration of each type of fitting and of each size in which that particular type is manufactured, and this method is applied to all the more important and generally used conduit accessories.

A cable or telegraphic code has been incorporated in connection with the Simplex steel conduit system, to facilitate the requisitioning of conduit material by telegraph or cable. The code is quite simple and easily understood. In a pronounceable word of ten letters (thus complying with the post office regulations) the following details can be given:

(1) The type of conduit or fitting ordered; (2) the size; (3) whether for socket, screwed, or continuity junctions; (4) the quantity required. Each grade of conduit and fitting throughout Section "T" of the catalogue is given in a code word of three letters; the quantity is given by a further similar code word, and the other details are indicated by two-letter affixes. The list contains many new items.

Section "F" is of particular interest to architects and builders, as it comprises a very varied selection of electric-light fittings, varying from a bracket listed at 9d. to a 60-light electrolite priced at £60. In this section fittings for the suburban villa, the club, or public building are found. The selection given includes a very varied range of fittings specially designed for Holophane glassware, and a range of fittings for indirect lighting, which has now been adopted in many new buildings, is also shown. As a branch of the company's electric light fittings department, the making of ornamental switch-plates and door and cabinet furniture has been developed, and there are several designs of cabinet furniture by Mr. R. L. B. Rathbone.

COMING EVENTS.

Thursday, November 28.

Sheffield Society of Architects and Surveyors.—Mr. J. C. P. Toothill on "A Visit to Bath." (Students' Meeting.)
Concrete Institute.—Mr. John M. Theobald, F.S.I., on "Bills of Quantities for Reinforced Concrete Work," at 7.30 p.m.

Architectural Association (Camera, Sketch and Debate Club).—Exhibition of Sketches.

Friday, November 29.

Birmingham Architectural Association.—Mr. Lawrence Weaver, Hon. A.R.I.B.A., on "Small Country Houses of To-Day."
Institution of Municipal Engineers.—Meeting at Gloucester.

Saturday, November 30.

Institution of Municipal Engineers.—Meeting at Exeter.

Monday, December 2.

Royal Institute of British Architects.—Business Meeting.

Wednesday, December 4.

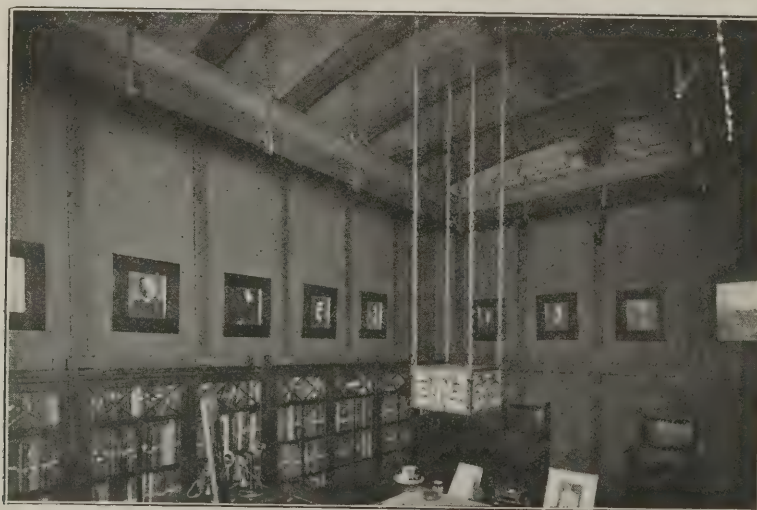
Edinburgh Architectural Association.—Mr. Percy Fitzgerald, M.A., F.S.A., on "Robert Adam, Artist and Architect."

Liverpool Architectural Society.—Mr. Lawrence Weaver, F.S.A., Hon. A.R.I.B.A., on "Small Country Houses of To-Day."

Monday, December 9.

Architectural Association.—Joint Meeting with Art Workers' Guild.

Bristol Society of Architects.—Mr. Francis Bond, M.A., Hon. A.R.I.B.A., on "The Growth of the English Parish Church."



A STUDY FINISHED IN BEAVER BOARD.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, November 27th, 1912.



THE GLAMORGAN COUNTY HALL, CATHAYS PARK, CARDIFF.



VINCENT HARRIS AND THOMAS A. MOODIE, ARCHITECTS.

THE
ARCHITECTS' & BUILDERS'
JOURNAL.

Wednesday, December 4th, 1912.

Volume XXXVI. No. 933.

No. 10.



(From Piranesi.)



ENTRANCE TO BANK, RUE LAFITTE AND PILLET-WILL, PARIS.

H. NÉNOT, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

DECEMBER 4th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 933.

The School at Rome.

IN a day or two there will arrive the first drawings for the preliminary competition for the English Prix de Rome—the £200 a year scholarship in architecture to be held for three years at the newly founded British School at Rome. A little later will come the drawings from the Colonies. From all these will be chosen some fifty to enter for a second round, and from these again ten or a dozen to work out the final problem in cubicles at the Institute. Nearly 300 applications have been received for the subject set for the preliminary competition, so that there is every prospect of a fine result, representative of the best student talent in the Empire. The subject for this preliminary round—a mausoleum on a rocky islet in a lake—is an inspiring one which should test well the architectural abilities of the candidates.

The founding of the School at Rome is an event charged with the greatest potentialities for the art of architecture. The founding of the Institute itself was in this respect a lesser event, for the Institute, representing no particular faith or point of view, has had no particular influence on the course of British architecture. That does not mean it has been without value to architecture considered as a profession. Everyone knows that the exact reverse is the case, and now that past schisms have been healed, and practically all the best men are within its ranks, its influence in raising the general standard of culture and education among architects is paramount. But such a body, just because it is so representative, can do little to focus architectural taste. It cannot lead a movement; at best it can whip up the laggards in the rear. In this the Institute resembles the Royal Academy, though the latter body, having little claim to be representative, has less excuse for the comfortable mediocrity which appears to determine its policy. The school at Rome, however, both in Architecture and Sculpture, must mean the study of classical standards, or why should it be at Rome? We may agree with that study or we may not, but in any case we know clearly what it means. It is a step in a definite direction, and for that, in these invertebrate days, all may be thankful. The large majority of architects, however, can go farther and say it is a long and definite step in the right direction. For the last ten years English architecture has been feeling its way back with painful slowness towards the severer ideals of classical antiquity. The youthful anarchists of the Gothic Revival, who for a time obscured, if not destroyed, the long accumulations of English classical scholarship, are now dead. Their followers to-day no longer place their faith in the dry bones of Gothic archæology, and are so much the better artists. Their individualistic point of view, however, is now sufficiently imbedded in current taste and thought to prevent the new classical scholarship, which we shall hope to see arise from the new School at Rome, being in its turn merely pedantic. It may mean, indeed, that the meeting of these two streams of thought—the classical stream from Rome and the

romantic stream native to so large a portion of our national temperament—will produce in England, under the new conditions of real knowledge and scholarship which a fresh study of the works of antiquity should bring about, an efflorescence of art, the veritable renaissance which for the last fifty years we have been waiting for in vain. It is out of the mixture of opposites that new and culminating epochs in art arise. The mixing of the Dorian strain and the Ionian in Athens in the fifth century B.C. produced the marvels of the Periclean age. It is not unreasonable, therefore, to hope that the contact between modern English individualistic art and the greater communal art of Rome and Greece brought about afresh by this new school may have some great results in store for us.

But it may be argued that the admitted barren half-century through which we have passed has been due to an attempt to combine Classic and Gothic ideals, and that the resulting free or romantic Classic has only made us long for the purer stream of either style. That is all true enough, but the reason for the failure has been in this attempt a compromise which greater knowledge would have shown to be impossible. The Classic architects before the Gothic Revival knew their detail if they knew nothing else. The Gothic people in their enthusiasm knew theirs with an intimacy of knowledge past belief to the modern student. The men who followed—the men of the Romantic-Classic period—knew neither. The strain of thought was strong enough to compel the requisite study; hence all this individualistic architecture and false originality.

Now, however, that we have a School at Rome, backed with the prestige and power of the Government, all ambitious students will look to it, and the results of its competitions, for guidance. The influence of the School will reach far beyond the individual students who pass through it; though the forty picked men (counting the Jarvis scholars) who in twenty years will have worked there will make a great impression on their return. We have only to remember Mr. Norman Shaw to see how great an impression one individual can make in a country like England. Two or three banded together may move mountains. The yearly exhibition of the work done at the School, if it approaches the French and American standard—and we see no reason why it should not—will have an enormous effect on the younger generation at home. The fact, too, of a few architects having lived and worked with painters and sculptors, in the freer atmosphere of their arts, will make for that very desirable thing, a more complete understanding between these arts. All stand to gain by this, not least the sculptors, as every architect knows who has had to employ them.

Again, the scholarships for the School at Rome being open to architectural students from the Colonies as well as from Great Britain, we may expect a corresponding breadth of influence, direct and indirect. Canada, who till now has largely turned her back on English architecture, and has given most of her vast new public and semi-public buildings to men trained in

the American schools or in Paris, will feel a new point of contact with us through the School at Rome. It would be no surprise to those who have seen recent Canadian work if the prize in some of these early years falls to men in Canadian offices. And thus the School at Rome, by making our architecture less insular and individual, may end by making it a more adequate expression, than it now is, of our Imperial needs. So, what more suitable or worthy thing could result from a School in the Imperial City?

C. H. R.

Registration and the Architect's Assistant.

AMONG the many problems which are included in the registration of architects is that concerning the assistant. The case is at present being actively taken up by the Guild of Architects' Assistants, who propose to send a deputation to the Royal Institute to put forward the following points:—(1) The revision of the present conditions of pupillage; (2) architectural education and the registration of qualified assistants; (3) that practitioners employ only registered assistants or architects; (4) a minimum salary for assistants; (5) representation of assistants on registration authority; (6) appointment of committee of registration authority to protect the interests of architects' assistants and pupils; (7) open competitions.

These points cover far too wide a field for us to attempt to deal with them here, but the main proposals—that assistants should be included in the Registration Bill and that architects should employ only registered assistants—may very well be set out and commented upon.

The case is thus put:—The architect's assistant is a member of a permanent class which persists, notwithstanding the fluctuation of individual fortune. His claim for adequate consideration in the proposed bill for the registration of architects is justly based on his membership in the promoting societies and his position in the profession. The result of the recent inquiry by the R.I.B.A. into the question of the number of Associates qualified for candidature as Fellows is not known, but should prove a valuable indication of the probable extent of the architect's assistant's interest in the Royal Institute. A glance at the membership lists of the promoting societies will show that about one-fifth are, obviously, students and assistants. A large percentage of the remainder are employed during the greater part of their career as assistants, and, as such, many continue. Together with these considerations, which serve to outline the position of the assistant in the promoting societies, there are those which affect the profession as a whole. Every member of the profession passes a varying period as assistant. A large number of assistants are permanently employed as such by Government, municipal, and other corporate bodies. Few are able to hold the position of practitioner continuously and consistently, whilst the experience of many fluctuates between the two positions, which, in other cases, are held simultaneously. Further, there is the mass of architects' assistants who are unconnected with any professional society. The Guild of Architects' Assistants believes, therefore, that the interests it represents are as fundamentally important as any other with which the proposed Bill may deal, and urges that a series of protecting clauses should be included determining the position of the architect's assistant.

So far as we can see, there is no reason why such clauses should not be included. At the same time we would point out that the primary object of registration is to prevent men putting themselves before the public and practising as architects when they are not properly qualified to do so. There seems to us no doubt whatever that a Registration Bill must be promoted by the Royal Institute in the near future, but it cannot be too strongly stated that, as part and parcel of it, there must be a revision of the existing scheme of

architectural education. If registration is put forward merely on the basis of pounds, shillings, and pence, then it will never get the support of those members of the profession—and they are numerous—who have a higher idea of their work. The real aim should be to establish a regular course of training through which an architect would be required to pass. That would not necessarily produce an artist, but it certainly would stamp the profession as being made up of educated and qualified men, which it certainly is not at the present time, when anyone can put up a brass plate and call himself an architect. All who are familiar with the high position which architects hold in the United States will realise that a recognised educational training can very greatly raise the status of the profession, and we think that a similar result would be secured here if similar methods were adopted.

All architects being at one time assistants, and some of them remaining permanently in that capacity, it is only fair that the assistant should be included in the Bill. But the damage at present done to architecture in this country is not wrought by assistants as such, but by the full-blown architect when he emerges—often from very dubious obscurity—on an ignorant public.

The Publication of Assessors' Names.

MR. C. F. A. VOYSEY has circulated an open letter to the Royal Institute of British Architects with regard to publishing the names of assessors in architectural competitions before the designs are sent in. Mr. Voysey is thoroughly opposed to the practice, but we think there is much to be said for it. The grounds on which Mr. Voysey bases his objections are that this prior publication prevents many architects from competing who are out of sympathy with the tastes and ideals of the assessor, and that, worst of all, competitors are thus induced to design "up or down to the assessor's level."

There are evils in any system of conducting architectural competitions, but, in our opinion, no good whatever would be effected by doing as Mr. Voysey desires. For years architects have been hammering at competition promoters in order to secure proper conditions, and one of the special points they have made is that concerning the appointment of qualified assessors. Formerly the building committee, devoid of professional knowledge, chose the design which seemed best in the eyes of the members, and in this way many a good design was passed over. By systematic protest against this unsatisfactory method of adjudication, it may be said that local authorities up and down the country have come to recognise that the proper way is first to get an assessor appointed by the Institute. And it is the publication of the assessor's name that gives competitors confidence in submitting designs. It is quite true that competitors, knowing an assessor's foibles, may play up to them, but there is no great harm done, and the result is certainly far more satisfactory than would be the case if competitors did not know who was to assess their designs.

Mr. Voysey is rather painfully ethical when he continues:—"It is a fearful tyranny that imposes any style on a designer. Conditions and requirements *and moral law* are enough data from which to produce the noblest architecture if properly attended to; assuming, of course, some degree of native refined sensibility. But when any style is imposed upon the designer the conditions and requirements that ought to control him are made subservient to the style. The plan has to be squeezed like a Chinese foot, and the honest expression of needs is sacrificed to the conventional commonplace of symmetry."

We cannot see where this is leading us. It appears to be a rather unfortunate mixture of morals and architectural planning. And there is, about the whole letter, a too sensitive feeling which we fail to recognise as being of any service to modern architecture.

THE ENGINEERING SKILL OF THE ANCIENT BUILDERS.

BY H. SLICER.

THE large size of many of the stones used by the Egyptians and other ancient peoples has given rise to the question of their manipulation and erection, which question has never been authentically answered. The Egyptian wall paintings, however, give us certain information upon which to base a theory, which, coupled with later writings and the results of explorations, assist in elucidating the mystery to a certain extent. The lever, the wheel and the windlass we know were in common use, but we are unable to determine how far the ancient builders were able to use them in the form of machines.

In order to realise the difficulties of transport and erection it is necessary to know the sizes of some of the huge stones that were employed. In the Great Temple at Baalbec, for example, is a stone 12 ft. high, 11 ft. thick, and more than 60 ft. long, and in the quarries at the same place is a stone measuring 15 ft. by 14 ft. by 77 ft. in length, calculated to weigh about 820 tons.

Josephus says that Herod built a haven and let down into twenty fathoms of water stones which were 50 ft. long, 10 ft. wide, and 9 ft. deep, while the tomb of Theodoric at Ravenna (built A.D. 530) has a roof of one stone 25 ft. in diameter, and computed to weigh 470 tons. Trajan's column has a cap in one piece of marble, 14 ft. square and nearly 5 ft. thick; the difficulty of raising which to the top of the column can easily be imagined.

Enormous stones were used for the building of the temple of Minerva at Sais, the largest of which, of granite, occupied 2,000 men for three years in transporting it from the quarry at Elephantine.

Another astonishing example is afforded by Ancient Tyrus, where Major Conder says he saw the remains of a castle or palace having a wall 21 ft. high formed of only three courses; some of the stones being 20 ft. long and 10 ft. high.

Numerous other examples of the stupendous size of the stones employed by the ancients could be given, but one more will suffice to show that other nations besides the Egyptians were concerned with great monoliths. On Easter Island, in the South Pacific Ocean, are 555 statues, all alike in design, but varying in height from 3 ft. to 70 ft. They stand upright on stone platforms, beneath which are tombs. As one of these statues weighs upwards of 250 tons, the difficulty of placing it upright upon the platform could not have been overcome by any simple-minded people, but so far no evidence as to when and how these stones were erected is available.

Turning next to the methods adopted by the ancient builders we may note that on the Pyramid of Cheops (according to Herodotus) 100,000 men laboured con-

stantly, relieved every three months by a fresh contingent. After ten years of toil a causeway was constructed, this undertaking being considered by Herodotus as scarcely inferior to the building of the pyramid itself.

The pyramid was built in steps, having faces nearly perpendicular. From the base the stones were raised by "means of machines formed of short wooden planks." The first machine raised them from the ground to the top of the first step. On this there was another machine, which received the stone upon its arrival and conveyed it to a second step. Either they had as many machines as there were steps in the pyramid, or possibly they had but a single machine, which, being easily moved, was transferred from tier to tier as the work rose.

The machine for raising the stones, we are told, was formed of short wooden planks. Wooden arrangements have been found in the form of rockers, similar in shape to the curved rockers of the old grandfather's chair, and the suggestion is made that the stones were first placed on such rockers. To tilt the stones by means of them would have been an easy matter; then, whilst one end of the rocking machine was well clear of the ground, a thin wedge was inserted. The stone was then rocked in the opposite direction, and a second wedge inserted at the other end. Thus the stone was raised a few inches on a platform formed of two rockers. By repeating this process many times the stone could be moved sideways on to, say, the top of a pile of wedges. Thus, with suitable planking, the stone could then be moved sideways on to, say, the top of the base course, when the rocking process would be recommenced. Truly the task would be a lengthy and laborious one, but labour and time were evidently of no account in the time of the Pharaohs.

Herodotus records an inscription on the base of the pyramid (now, however, gone, as the outer stones are no longer there) which gives the quantity of radishes, onions and garlic consumed by the labourers, and it is said that the money expended in this way was 1,600 talents of silver. Taking a talent of silver as equal to £375, the above foodstuffs cost £600,000! Herodotus marvels at this, and makes the comment, "What a vast sum must have been spent on the iron tools and on the feeding and clothing of the labourers." Evidently iron tools were employed for the work, iron having been known in Egypt at a very early date—according to Professor Petrie some 4,000 years before it was used in Greece.

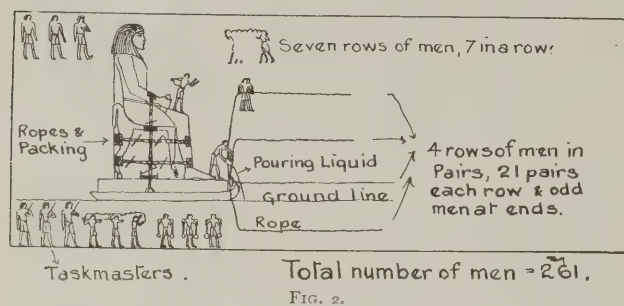
The method employed by the Egyptians in moving heavy masses is shown by the accompanying sketch (Fig. 2), taken from a bas-relief. It depicts the removal



FIG. 1.

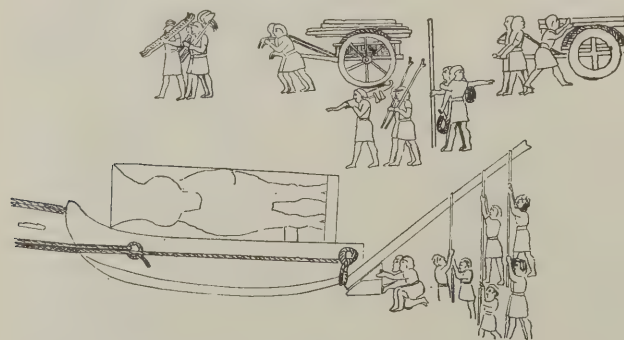
of a colossus from the quarries to the temple, and if the number of men shown is correct the removal must have occupied 245 men, 172 of whom are engaged in hauling at the ropes. Three men are shown carrying an arrangement having a serrated edge, while another three are carrying pairs of buckets attached to an arrangement like a milkmaid's yoke; these latter are evidently water-carriers supplying the man who is seen standing upon the base of the colossus pouring water on to the ground over which the sleigh carrying the colossus is to be dragged. Another man is standing upon the knees of the colossus, evidently directing operations. In this picture we see very clearly how the colossus is tied with ropes to the sledge arrangement. The ropes pass round the figure in two directions, and, in order to prevent injury to the figure, some form of padding is placed under the ropes at the angles. It will be noticed that means of tightening the ropes are shown—pieces of wood inserted in the strands to twist the rope round, in the same way as the modern joiner tightens his large fret-saw.

In this illustration no sleepers or wooden rollers are shown, neither are levers and wedges being employed, but it is certain that the Egyptians were familiar with both these mechanical devices; they even employed diamond drills for cutting granite.



Turning to Assyria, we have, in the accompanying figures (1 and 3) records of the method employed in moving the colossal bulls of Nineveh, each weighing nearly 50 tons. From these sketches it will be seen that the Assyrians possessed a knowledge of mechanics far in advance of that of the Egyptians. The illustrations show how the mass to be moved was placed upon a sleigh similar to that already referred to. Ropes were fastened to it in pairs, both from the front and the back, and gangs of slaves were employed to drag it along. Other slaves were engaged to place pieces of wood upon the ground, some of these appearing to be round and others flat. Behind the sleigh two men are employed in fixing wedges, upon which a large lever rests. To the long arm of the lever ropes are attached, and the combined power of many men serves to pull down the lever and force the sleigh forward.

In the upper part of Fig. 1 will be seen carts not unlike a modern contractor's hand-cart, on which planks and spare ropes are being carried. In Fig. 3



carts with four and six spokes are shown, and one man is in the action of taking planks off the cart. Two other men have rods with forked ends in their hands.

There are other men shown in this bas-relief who carry what may be hammers, or perhaps are simply staves of office.

To give some idea of the number of men required to move these heavy weights it may be stated that Layard found that 300 men were required to move the cart bearing the great bull which he discovered.

One can only marvel at the patience of these people, for just consider how long it must take to move a heavy mass a single mile by such a slow method as a sleigh and lever.

A TRIBUTE TO NORMAN SHAW.

BY PROFESSOR BLOMFIELD.

IN the Journal of the Royal Institute of British Architects appears the following appreciation of the late Mr. Norman Shaw, R.A., written by Professor Reginald Blomfield:—

The announcement of the death of Mr. Norman Shaw must have come as a shock to all artists in this country. It had been known to his friends for some time that Mr. Shaw had been in failing health, but the gallant spirit with which he met his illness made it hard to realise that the end was at hand. It is the close of a great career, in the fullness of age and honour.

We are yet too near to attempt to appraise the quality of his work, the extent of his influence on the development of English architecture. By the ready consent of all, he had long been looked up to as the leading spirit of English architecture, perhaps the most remarkable English architect since the days of Sir William Chambers; it will be for the historian, later on, to attempt to define more clearly his position in English art. But all who ever came into contact with Norman Shaw will remember his most fascinating personality, his genuine and chivalrous friendship, his kindness to younger men, and the extraordinary influence that he had in stimulating them to a high and worthy conception of the art of architecture. I first made Mr. Shaw's acquaintance as a student in the R.A. School thirty years ago. The subject set by him as visitor was a pedestal for an equestrian statue. On this I was labouring blindly when Mr. Shaw came round to criticise my design. In a few casual remarks, half humorous, half serious, he unlocked the gate of a new world of ideas, and completely altered my outlook on architecture. So always, any who came to him for advice went away with a sounder and a more sober estimate of their own achievements, and yet cheered on to persevere and pursue their own ideal.

Norman Shaw was an artist, absolute and ingrained. To scholarship and learning he made no claim, but he possessed a mind of rare distinction, a shrewdness and clarity of intelligence that illuminated the darkest corner of any difficulty, made everything seem delightfully simple and easy, and did, in fact, suggest the way out to those less favoured than himself with resource and quick imagination. A man who disclaimed any powers as an orator or writer, he was, in fact, an admirable speaker, and few men have ever written more charming and characteristic letters. He handled every subject with an inimitable lightness of touch, letting his humour play on it, yet never losing sight of the essential purpose of his writing. To borrow a term from horsemanship, he had beautiful hands.

There has been a singular completeness about the career of this most distinguished architect. An artist, and always an artist, he was indifferent to honours (I believe I am right in saying that he declined a baronetcy). He was equally indifferent to society in the technical sense. His whole power was concentrated on the art that he loved and to which he dedicated his life; and from the ideals that he formed in early life he never swerved. It has been a fine life: finely conceived and finely lived.

CORRESPONDENCE

*The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents.
Correspondents are asked to be brief and to write on one side only of the paper.*

The Architects' and Surveyors' Approved Society.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—It is doubtful if architects or surveyors or those employed by them have fully realised the effect of the Insurance Act, or the way in which it will in the future affect them. The trouble will begin when the benefits payable under the Act come into force and those employed fall sick, and find (as is bound to happen in many cases) that their employers decline to pay the usual salary.

The principal reason for the formation of the Architects' and Surveyors' Approved Society is to keep in the profession the funds supplied by architects and surveyors, and those employed by them, instead of allowing them to be distributed amongst the miscellaneous membership of the ordinary approved society. That it was wanted is proved by the daily growing membership. But in addition we believe that many members of both professions have long felt that they would like to see some form of provident or benevolent fund available for those clerks and assistants who may, through no fault of their own, fall on evil days, but the difficulties of starting such a scheme and administering it fairly have hitherto stood in the way of its foundation. Now, however, new conditions have arisen, the Insurance Act has made the necessity of some such scheme greater than ever, for the reason above mentioned, and the same Act has created the necessary machinery for administering and organising such a fund by means of the honorary members of the society, who subscribe 10s. 6d. per annum.

The Architects' and Surveyors' Approved Society have now under consideration various suggestions and proposals for administering the annual sum which is provided by the subscriptions of honorary members, and it is hoped that the professions will widely support this fund. It is proposed to work in harmony with the existing architects' and surveyors' benevolent societies, which all exist for the principal rather than the assistant.

All communications, subscriptions or suggestions will be welcomed, and should be sent to the Secretary at 18, Tufton Street, Westminster, who will submit them to the sub-committee now dealing with the subject.

No active steps will be taken in the actual administration of this fund until definite proposals have been submitted to the Councils of the Royal Institute of British Architects, the Surveyors' Institution, the Architectural Association, the Society of Architects, and the Quantity Surveyors' Association, who are represented on the Committee of the approved society by their presidents and secretaries.

GEORGE CORDEROY.

A. GODDARD.

IAN MACALISTER.

H. D. SEARLES-WOOD.

C. MACARTHUR BUTLER.

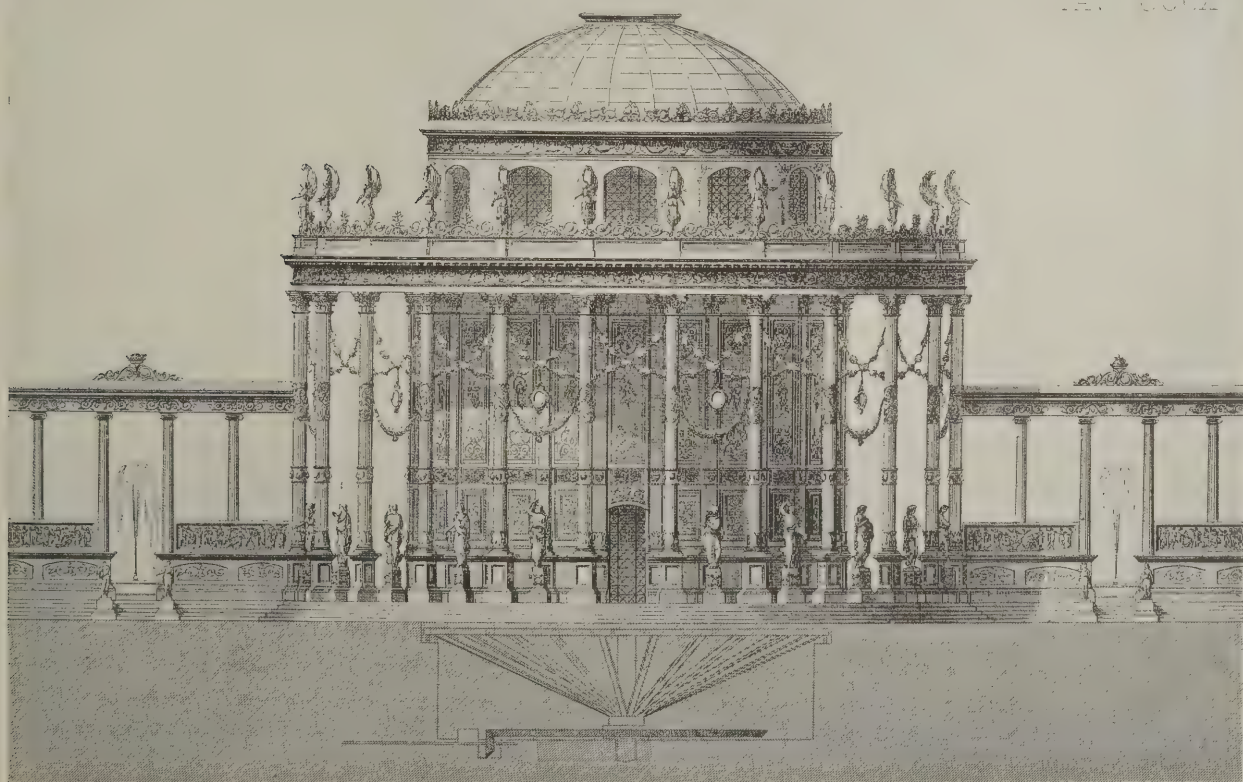
MAURICE E. WEBB.

(Members of Sub-Committee).

The Area of a Circle.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—The discussion on obtaining the area of a circle is truly interesting, and the letter of Mr. H. F. Wilkinson in your issue for November 27th is, as he



This offers a good suggestion for the treatment of a modern bandstand.

CONJECTURAL RESTORATION, BY CANINA, OF CIRCULAR HALL IN THE GROUNDS OF NERO'S PALACE AT ROME, SHOWING MECHANISM FOR MOVING THE CENTRAL PORTION.

himself says of another letter on the same subject, "remarkable."

After working out the square of the diameter, surely one obtains square units. Now to multiply square units by linear units, namely, "0 ft. 9 5-12 in." would give cubic units. Is then the area of the circle measured in cubic feet and inches by this method?

R. E. MARSDEN.

Goldsmiths' College, London, S.E.

MODERN SMALL HOUSES.

THIS week, on page 603, we illustrate a house at Esher Park, Surrey, the architects of which are Messrs. Geoffrey Lucas, F.R.I.B.A., and Arthur Lodge, A.R.I.B.A., P.A.S.I., of London, W.C. This house is the centre one of a proposed group of five, and was built for the Esher Estates, Limited. The materials are 11 in. red brick hollow walls, red-tiled roof, and white painted wood window and door frames.

THE TOWER OF THE PALAIS DE JUSTICE, BRUSSELS.

AS the Centre Plate in this issue we publish a very fine photograph of the tower of the Palais de Justice at Brussels—that remarkable building of J. Poelaert, which was commenced in 1866 and completed in later years at a cost exceeding £1,750,000. There is a certain coarseness about some of the details of the building, but the piling up of this great central mass is completely astonishing, and, with its crowning dome, is an architectural work that dominates the mind by its sense of Herculean grandeur.

R.I.B.A. PROBLEMS IN DESIGN.

A CONSIDERABLE number of designs for Subject V. (a) were approved recently by the Board, among them being the design for a picture-gallery by Mr. H. C. Bradshaw, of the Liverpool School of Architecture, the elevation of which is reproduced on this page and the details on page 601. The particulars stated that the building was to be in a public park and to comprise six galleries of varying size, with cloakrooms, etc., in conjunction. Plans, sections, and elevations were required to be to $\frac{1}{2}$ in. scale, and details, both external and internal, to $\frac{1}{4}$ in. scale and shaded.

OUR SPECIAL ISSUE.

Forty Plates of Domestic Interior Details.

THE Special Issues which it has been our practice to publish at the end of the year have been very much sought after, and this year we think that the demand will be greater than ever before.

Bearing in mind the immediate success of the 1911 issue, with its illustrations of garden-suburb houses, we shall publish, as the special feature of this year's issue, a series of forty plates of details of domestic work by well-known architects, including Mr. Ernest Newton, Mr. E. L. Lutyens, Mr. E. Guy Dawber, Mr. Mervyn Macartney, Mr. E. J. May, Mr. E. Turner Powell, Professor C. H. Reilly, Mr. Oswald P. Milne, Mr. Ronald P. Jones, Mr. F. S. Chesterton, Messrs. Horace Field and Simmons, Messrs. Richardson and Gill, Messrs. Geoffrey Lucas and Lodge, Mr. T. Millwood Wilson, Mr. J. M. W. Halley, Mr. Evelyn Hellicar, Messrs. Woodhouse, Corbett, and Dean, Mr. W. H. Bidlake, Mr. Percy Newton, Mr. C. H. B. Quennell, and Mr. Leonard J. Williams.

These forty plates have all been specially prepared from the architects' working drawings, and they give the practical details of both the design and construction; they include, also, small photographic illustrations of the executed work, thus making the representation complete. Chimney-pieces, staircases, panelling, doors, and similar interior details are shown in this way, and, in addition, there will be a number of most useful plates of dressers, pantries, serveries, store-room fittings, and other practical details not to be found in any other publication.

Quite apart, therefore, from the interest attaching to the section of the issue which is devoted to the illustration of the notable buildings of the year, it will be evident from the above particulars that our Special Issue this year will be of very great practical value. The 1911 issue, with its photographs and plans of garden suburb houses, went out of print very soon after publication, and as not even the most strongly worded letters from old subscribers will produce further copies when once the issue is exhausted, we would especially urge all readers to place their orders for this year's Special Issue without delay, either with their news-agent or direct with the Publisher, at 6, Great New Street, Fetter Lane, E.C.

The issue will be an additional one, dated December 31st, and will be published at 1s. net (postage $\frac{1}{2}$ d. extra).



TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION: APPROVED DESIGN, SUBJECT V. (a).—A PICTURE GALLERY.

BY H. C. BRADSHAW.

HERE AND THERE.

A PART altogether from what one may think of his architectural achievements—and they are open to criticism as much as to praise—it is delightful to note how everyone bears testimony to the great good-heartedness of the late Mr. Norman Shaw. His was one of those personalities which both attract and inspire; and this notwithstanding that he held the most pronounced opinions and did not hesitate to express them. His views, like his handwriting, were clean-cut and vigorous. It is only in the nature of things, therefore, that anecdotes of his doings and sayings should be plentiful. One of these recounts how Norman Shaw came to sever himself from the Institute. In those early days Shaw and Nesfield were in partnership and occupied the same suite of rooms in Bloomsbury. They had both just become Associates, when Professor Donaldson called to ask Norman Shaw to read a paper before the Institute. Shaw was out at the time, but Donaldson saw Nesfield, and told him that he, too, would be expected to read a paper. Nesfield protested that he had never done such a thing in his life, to which Donaldson replied that it was an excellent occasion then to begin, adding—and he must have been pulling Nesfield's leg very effectively—that every new member of the Institute was *expected* to read a paper. Nesfield took it all in seriously, and extended his misgivings to Shaw when the latter came in. Shaw was equally vehement, affirming that he, too, had never read a paper and never intended to. "Well, what's to be done?" asked Nesfield. "Resign," said Shaw. And they posted their resignations the same night.

The above is given on the authority of a distinguished architect-professor who was contemporary with Shaw. It is a good story, and it seems a pity to question its accuracy. I do not believe, however, that Shaw's resignation was in any way connected with Donaldson and the reading of a paper. The actual facts have never been disclosed, but they are to be found, I think, in the Institute's private letter-files. If I am not mistaken it was some sharp difference of opinion between Norman Shaw and the Council that sent a ringing letter breaking off the connection.

But, despite this severance, Shaw's influence went on unimpaired. Is it not astonishing how many of his pupils went on in later years to achieve distinction in the profession? Professor E. S. Prior, Mr. Ernest Newton, Mr. Gerald C. Horsley, Mr. Mervyn Macartney, Professor Lethaby, Mr. Thicknesse—all these are well-known names to-day, and to make the list complete it would be necessary to add a dozen more, of men who have dropped out of notice or have died—such as the late Mr. E. G. Hardy, who was for twelve or fourteen years head assistant to Mr. Macartney. Then, too, there are the men who were with Nesfield—like Mr. E. J. May, Mr. Hames (the architect of Leicester Town Hall), and Mr. Darling. So that, in referring to Norman Shaw, we have to bring into consideration a score of other well-known architects who, in their early days, were grouped around him, just as he himself was, in his own early days, associated with other eminent men. It is not generally known that Norman Shaw, after having been articulated to William Burn, came to London from Edinburgh, and, with Nesfield, entered the office of Salvin (who I remember chiefly as the author of some appalling buildings at Cambridge—at Gonville and Caius in particular). Finally he went to Street's office, where he had such splendid colleagues as Philip Webb and Sedding.

My recent note on the Architect as Sportsman having, apparently, created a mild interest in the question, I have been endeavouring to supplement the two or three names of practising architects who have done something in the world of athletics. When writing the note I had a vague idea that Mr.—now

Professor—E. S. Prior had been an oarsman at Cambridge, but I have since learnt from him that his performances were in other forms of athletics. Here is the exact record of them. At Harrow he won the high jump, the hundred yards, the quarter-mile, the champion hurdle-race, and the Ebrington 200 yards. At Cambridge, in his various years at the University sports, he won the long jump, the hurdle race, and was second in the high jump—having then jumped 5 ft. 9 in. In 1872 he won the University 120 yards handicap after three dead-heats, and in the same year the amateur high-jump championship—having on that occasion cleared 5 ft. 6 in. out of wet mud. Mr. Prior, therefore, it will be seen, was a notable jumper. His best performances were in 1874, when, in one day, he cleared 21 ft. 2 in. in the long jump and 5 ft. 10½ in. in the high jump. When at Harrow he jumped the cricket-field railings—a spiked oak paling 5 ft. 6 in. high, and has lately crowned his achievements by jumping into the Slade Chair! Professor Prior also has other things to his athletic credit. As a skater he passed the figure-skating tests of the London Skating Club in 1873 (when he was twenty), and he was also a lawn tennis player, a boxer, and a gymnast—doing somersaults from the bar and trapeze: so that, altogether, his athletic record is as noteworthy as his architectural ability, for, I suppose, he is unquestionably the greatest living authority on English Gothic, while, as a domestic architect, he has produced some very remarkable houses.

Another Cambridge man who distinguished himself in athletics is Professor C. H. Reilly, he having been a quarter-miler under 53 seconds (the record, I believe, is about 47) and having been a member of the Queens' College football team. And while referring to football, I would humbly recant what I said about Mr. Leonard Stokes as a formidable man on the Blackheath field. That famous player, as a correspondent reminds me, was another Leonard Stokes, now a doctor, whose son, A. L. Stokes, is at present playing for Guy's Hospital.

But my list is not yet ended. Professor Blomfield's exploits as a good all-round sportsman were happily touched upon by Sir Aston Webb at the opening meeting of the Institute a month ago. Mr. Mervyn Macartney, too, was an athlete when at Lincoln College, Oxford, rowing having then been his forte. Finally, I would set down the athletic record of Mr. Edward Warren, F.R.I.B.A. At Clifton he rowed 3 in a winning club four in 1880. Later, for two or three years he played rugby for his county (Gloucestershire) and for two years more was a staunch forward of the Blackheath team. He was a keen volunteer, and as an officer of the 1st Gloucestershire Artillery won several trophies for gunnery and rifle shooting. Mr. Warren revolved into the mounted Infantry of the Inns of Court Rifles, and subsequently exchanging to the cyclists' company of that regiment, in which he remained for four years, entering no competitions, but earning the marksman's badge. So that in him we have a good patriot as well as a good architect.

It would be interesting to continue this uncompiled record of athletic achievements by modern architects. If any reader can bring forward some additional information, I shall be glad.

What was the very worst period of taste? The answer would surely lie with the "greenery-gallery" 'eighties. "Milestones" gives us a living picture of the period, in comparison with which the dress and the furniture of the 'fifties and 'sixties are positively beautiful and refined. How wonderful that anything survived!

UBIQUE.

THE RIGHT TO AIR.

BY A LEGAL CONTRIBUTOR.

IT is somewhat strange that although most modern building by-laws are specially framed so as to provide sufficient air-space in and around buildings, the ancient common law recognises no right of a land-owner or house-holder to the free access of air to his property. Perhaps it is that by-laws have been considered necessary to make good the defects of the general law.

The fact that there is no right to a free current of air was made plain in the case of *Webb v. Bird* (1861) 10.C.B.268. The owner of a windmill sued a School Board for erecting school premises so near to the mill as to obstruct the free passage of air enjoyed thereto for more than twenty years, and he obtained damages, subject to an award. On a case stated, however, the Court held that the owner of a windmill cannot claim, either by prescription or presumption of a grant from twenty years' acquiescence, to be entitled to currents of wind and air to his mill.

While this is still the law with regard to free current of air for the purpose of working a windmill, it seems that the right to air for ventilation may be acquired by prescription. In *Bass v. Gregory* (1890), 55.J.P.119, the cellar of a public-house had been for forty years uninterruptedly ventilated by means of a hole cut through a certain rock into an old well situate in a yard occupied by the defendant. The latter removed a grating from the hole and prevented the free passage of air from the cellar upwards through the well. The occupiers of the yard had knowledge of the easement enjoyed by the plaintiff. Pollock, B., held that the plaintiff could claim the easement of the free passage of air from the cellar, and that the lost grant claimed by the plaintiff ought to be inferred.

While the right to air for ventilation may apparently be obtained by prescription, it appears that a man cannot by long user acquire the right to have his chimney-stack uninterfered with by buildings. In *Bryant v. Lefever* (1879), 4.C.P.D.406, the plaintiff and the defendants occupied adjoining houses. The occupiers of the plaintiffs' house had for more than twenty years enjoyed access of air to the chimneys thereof. The defendants, in rebuilding a wall on their premises, raised it to such a height as to cause the chimneys of the plaintiff's house to smoke. The jury found for the plaintiff in his action against the defendants in respect of the easement of air claimed, and on the ground of nuisance, and judgment was entered for the plaintiff, but on appeal by the defendants the Court of Appeal reversed the judgment, holding that no action was maintainable by the plaintiff against the defendants either on the ground of easement or of nuisance.

It is of great importance to timber merchants to remember that the right to free access of air cannot be acquired by prescription. Thus, if a man uses an open shed in his yard for the purpose of storing timber, he should be careful to so place it that the access of air cannot be impeded by buildings on neighbouring land. Nor can this right be acquired by making a claim for access of light by prescription. In the case of *Harris v. De Pinna* (1887), 33.Ch.D.238, it was held that in order to secure an absolute and indefeasible right to light under s. 3 it must be shown not only that there has been an uninterrupted access of light to the building in respect of which the easement is claimed, but also that the light has reached the building by one and the same channel for the statutory period. Without, therefore, deciding whether the particular structure was a building within the Prescription Act, s. 3, the judge held that, as from the nature of the structure and the mode of carrying on the business, timber would be so piled as from time to time to block up one or other of the apertures so that the plaintiffs could not prove that there had been an uninterrupted access of light by any one aperture from the statutory period, their claim to an easement failed.

A right by way of easement to the uninterrupted access of air not coming by any definite channel, but over the general unlimited surface of the alleged servient tenements, where both held under a common lessor, either of itself, or, at any rate, when coupled with the fact that the lease of the servient tenement was the earlier, negatives any claim to the easement as arising out of implied covenant.

A MEASURING-TAPE PROBLEM.

MR. GRAHAM C. AWDRAV, in the course of some practical remarks to young architects which he gave at the last meeting of the Bristol Society of Architects, spoke of the importance of testing the length of measuring-tapes periodically, especially if they are to be used for accurate surveys of town property. Many a tape that has had a good deal of use will be found to have stretched 6 in. in its length of 66 ft. "If you are taking a frontage of 132 ft. there will be an error of a foot, and if the site is being sold or let by the foot of frontage at a high price the difference may amount to a large sum. For this reason it is well never to use a borrowed tape for an important survey. There is also a little mistake in calculation possible when using a tape that has by constant extension become strained beyond its proper length." Relative to this latter point Mr. Awdray recounted an experience he had many years ago, involving, in its result, a pretty problem. He said:—

I was surveying some building land in a country town, fronting on a road and bounded at each extremity by a road at right-angles to the frontage-road. I had previously tested my tape—the only one available—and found it was 9 in. too long. I measured the frontage—some few hundred feet—and entered in my book the total length as read from the tape, with a note that the latter was 9 in. too long. A few days afterwards I laid down to scale the frontage for the purpose of dividing it into plots for a terrace of attached houses, and as the tape was 9 in. too long I deducted this length from every tape-length, and a proportionate amount from the odd dimension.

Some weeks later, when I began to peg out the plots on the actual land, to my astonishment I found that, after starting at one end of the frontage and giving 25 ft. or so to every house, I had a surplus of 15 ft. of frontage at the other end of the row. This was not enough for another house, and yet I had to do something with it, so ultimately I let it go as garden ground with the end or corner house. What puzzled me, however, was how there came to be a surplus. I hunted up my papers and carefully examined my survey. I found the old tape I had used when I first measured the land, which was the only one obtainable at the time, and tested it again, finding I was quite right, and that it actually was 9 in. too long. Then I reckoned up the deduction I had made of 9 in. from every tape-length measured, and found that to be correct. The total deduction I noticed was (curiously) exactly half the surplus frontage, to an inch. Suddenly I saw my error. The tape was too long, so I had deducted from the readings the extra 9 in. of length. But I should have *added it on*. The result of deducting it had been to double the difference in the wrong direction. I called my assistant who had been looking into the matter with me, and some little time passed before he could see it, but when he did he also was greatly surprised. But he was a canny Scotsman, and the next morning he informed me that he had won five shillings the previous evening in a bet over the problem, another surveyor, to whom he put the case without mentioning names, having refused to believe that the extra 9 in. of the over-strained tape had to be added and not deducted, until he proved to him that this was so.

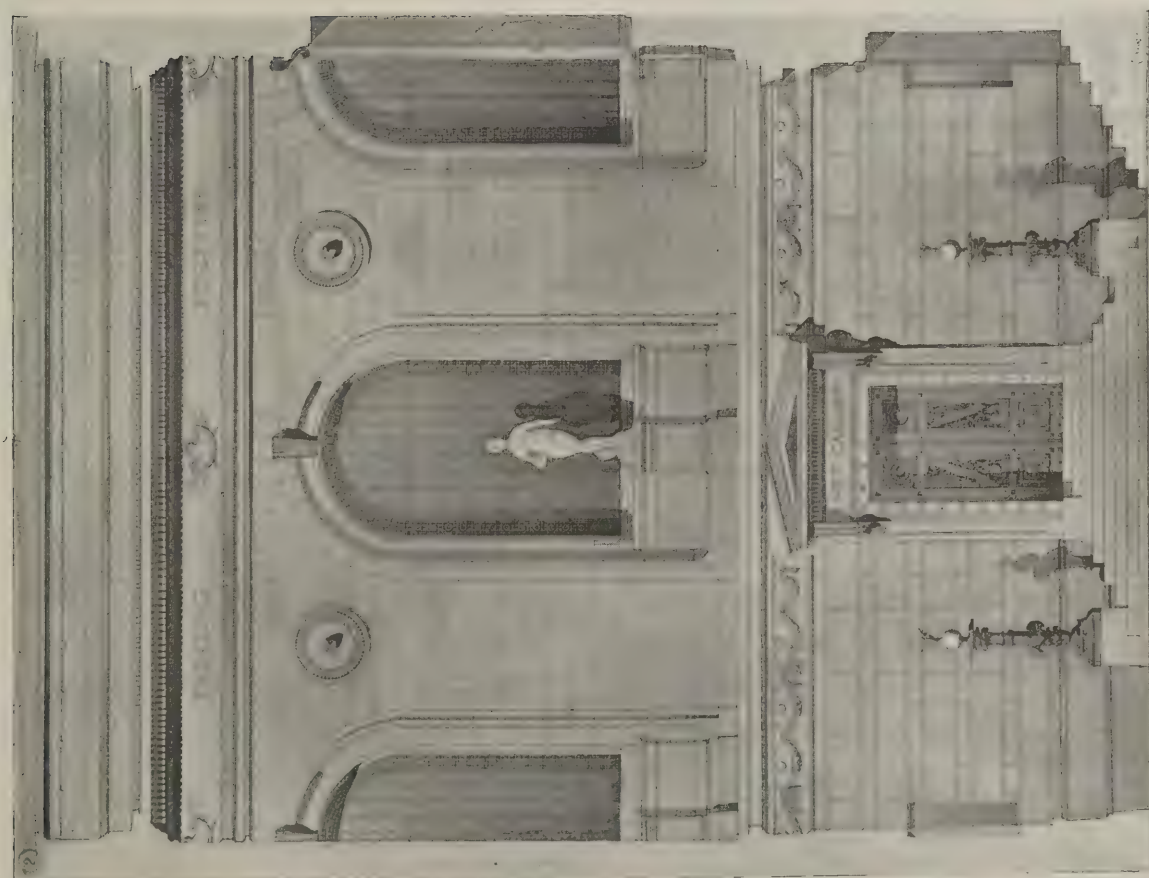
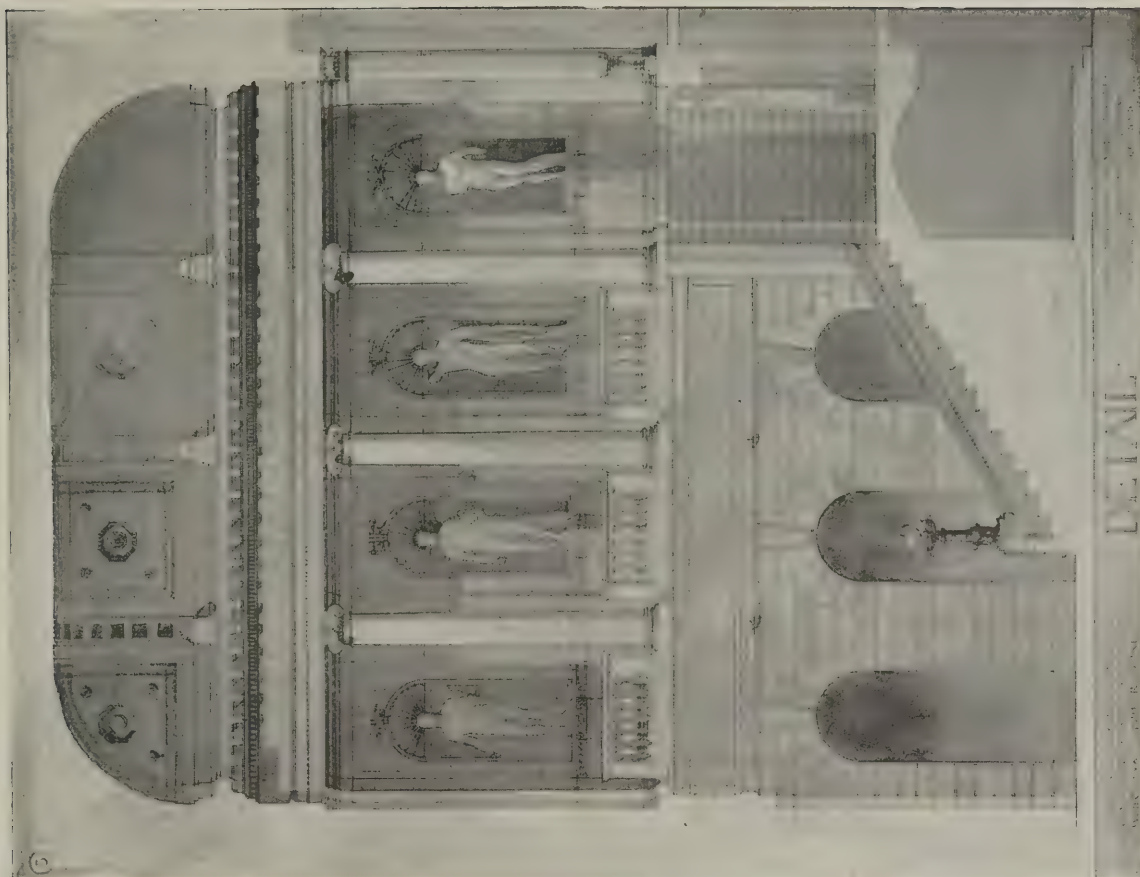


Telephoto: Architects' and Builders' Journal.

DETAIL OF RITZ HOTEL, LONDON. MEWES AND DAVIS, ARCHITECTS.

ALPHABET
OF THE
UNIVERSITY OF ILLINOIS

STUDENTS' PAGE.



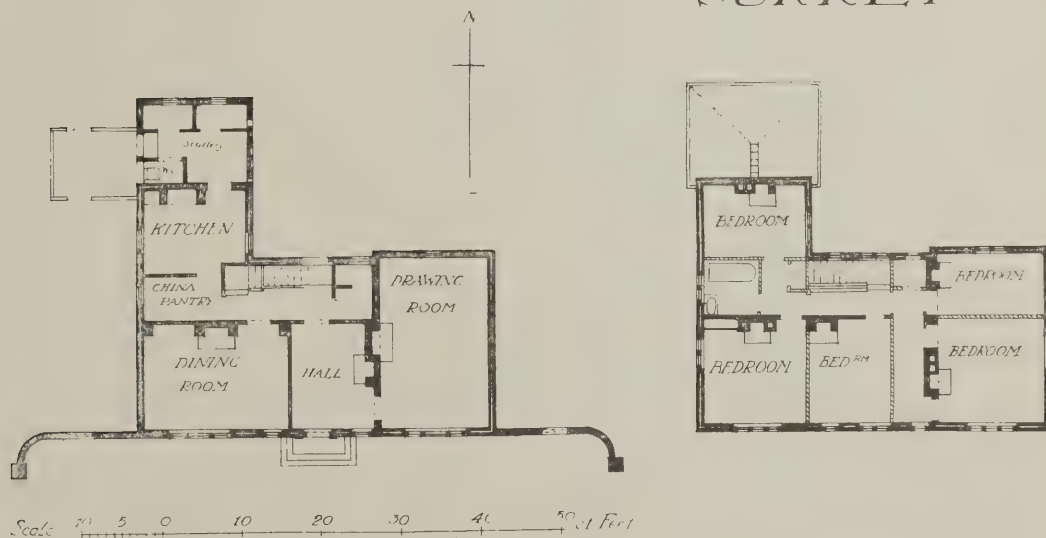
TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION :

APPROVED DESIGN, SUBJECT V. (a)—A PICTURE GALLERY. BY H. C. BRADSHAW.

OF THE
UNIVERSITY OF ILLINOIS



HOUSE AT ESHER PARK, SURREY



*GEOFFRY LUCAS, F.R.I.B.A., and
ARTHUR LODGE, A.R.I.B.A., Archts.*

WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS. VII.—ELM STREET

THE PROSAIC IN AN ARCHITECT'S WORK.*

BY HORACE CUBITT, A.R.I.B.A., P.A.S.I.

It may be said that it is difficult to know where to draw the line between true architectural work and surveying work that is undertaken by architects. But there is really no difficulty at all. An architect, as the designer of building work, should obviously be acquainted with all branches of knowledge that affect the work of design—using the word design in the correct sense of the word, and not restricting it as is so often done to the conception and elaboration of ornamental features. Beyond this his knowledge need not extend. It will be seen that ignorance of the various branches of work already mentioned will not handicap in the slightest the designer of building work. With valuations and dilapidations he is clearly not concerned, and his design will probably gain rather than suffer in execution, if the survey of the site and the preparation of the quantities are undertaken by some other person.

London Building Law.

Let us consider the chief of those subjects that are thought by many to be too unimportant and too prosaic to be worth the close and thorough attention of the exponents and students of architecture. Take, for example, the comprehensive requirements of the building law in our larger towns, and more particularly in London. Here we have an elaborate code which very materially affects the erection of every building. Consider an ordinary domestic building on an ordinary site, and it will be found that the position, height, and construction of the building will be very materially controlled by the requirements of the building law or by-laws. The building, for instance, must not extend beyond the frontage line; it must have the requisite amount of air space at the rear; it must not, if situated in London, extend above the diagonal line; its walls must be of specified materials of specified thickness; its system of sanitation must be designed and constructed throughout in accordance with specified rules. All these points are met with in the design and construction of a building of ordinary everyday class. In dealing with special buildings further requirements are encountered. Large public buildings, for instance, are required to be planned so as to afford reasonable means of escape in case of fire, and to be of fire-resisting construction. In London the means of escape requirements apply to a very large class of buildings, and there are also special constructional requirements affecting warehouses, shops with dwelling-rooms above, tenement buildings, etc.

What Knowledge is Essential?

But it will doubtless be said that there is no real need for the architect to bother his head too much about such matters; if he goes wrong the District Surveyor or the London County Council officials will soon put him right. In regard to the first of these two assertions, it must, of course, be admitted that a detailed knowledge of every single requirement is out of the question. Neither is such knowledge necessary to any person; for

the details of any requirement every careful person will consult the exact text of the Act or by-law in question. But a general knowledge of the requirements is a very desirable acquisition, and is not a matter of very great difficulty. But close attention and study is, of course, required; it is not possible to become well grounded in any subject without concentration, and the London Building Acts cannot be mastered in a spirit of absent-mindedness.

Rights of Light and the Law.

The law regarding rights of light is often considered to belong rather to the domain of the surveyor than that of the architect. But the great effect which this branch of the law has on the erection of buildings surely places it among the most important practical branches of an architect's study. Thousands of buildings are erected every year of which the heights, and thus to some extent the character of the elevations, are governed by the rights of light of neighbouring buildings. Architects should surely know to what extent they are able to build when concerned with a site thus subject to serious restrictions. Although the cases decided by the Courts are legion, yet, thanks to the decision of the House of Lords in the often-quoted case of *Colls v. Home and Colonial Stores*, the law on the subject is not unduly complex, and is within the understanding of any person who cares to give a little time to the study of it. An architect ought to have a reasonable acquaintance with the law on this subject, so that he can tell whether he is keeping within safe limits or whether the building that he proposes to erect is one of those on the borderline between what is and is not permissible. In dealing with a site subjected to rights of light, it will often be necessary to make the maximum permissible use of the site, a borderline case being in such instance the obvious primary objective of the architect. Then, in the subsequent negotiations with representatives of the dominant neighbouring owner or owners he can feel his way, and, if necessary, make some little concessions in order to dispose of any opposition that may be encountered. In matters of this kind an architect will surely produce a better building if he has a sufficient knowledge of the subject to enable him to act independently, and is not compelled at every stage to go to an expert for guidance.

Building Construction.

We now come to the question of construction. As regards those branches of the subject which are embraced within the work of the main building trades, the modern architect has generally a very sound knowledge. Indeed, in the case of brickwork, carpentry, and joinery, it is not too much to say that many architects know much more of the technique of these subjects than the average mechanic. And that this is so is one of the hopeful signs in modern architecture. But how about the important matters in the erection of a large building which it is the custom to include in the general term "engineering"? Here it is quite the exception to find that the architect is sufficiently familiar with the work to be able to design and control it in all details. He usually is

compelled to place such work, and thus to some extent his own reputation, in the hands of specialists. To a certain degree this action is justifiable. So many special matters are encountered in the construction of most large modern buildings that it is quite impossible for an architect of other than most exceptional attainments to be thoroughly well acquainted with them all. There is, however, a distinct line beyond which an architect ought not to go in delegating his work to specialists. If the special work is such that it can have no material influence on the general design and construction of the building, the specialist may be employed. Such matters as the technical details of electric lighting and hot-water heating of ordinary buildings may not unreasonably be delegated to specialists, for if this is done the resulting work will often gain by the arrangement. But, on the other hand, if the work is such that it affects the design of the building, the architect cannot rightly delegate it to anyone.

Structural Design.

There is one subject of vital importance in architectural work which comes within the latter category. This is the subject of structural design, within which may be included at one extreme the formation of the simplest type of cottage roof, and at the other such undertakings as the conception and elaboration of a dome like that of St. Paul's or a bridge like Waterloo Bridge. Most modern architects are exceedingly inconsistent in their treatment of this subject. So long as the problems to be solved are of a similar character to those which have been dealt with by members of his profession for centuries past, the average architect has no hesitation in applying his mind to them; but, given problems of a new character, and the use of new materials, he at once says, "These questions are beyond my ability and experience; I must call in the engineer." As a result, the services of the architect are often dispensed with entirely, or, when he is employed, we obtain structures that are the design of two persons working from entirely different standpoints. If, as usually happens in the case of a bridge, the engineer is responsible for the initial scheme, the work of the architect, if he is not ignored altogether, is restricted to the application of ornamental features—or features that are intended to be so—to the engineer's design. The thought that the chief beauty of a bridge is in its general lines rarely appears to occur to either party. On the other hand, in the case of a large structural feature of a building, the architect first evolves the design, paying principal attention to the question of appearance. When it is complete, he turns it over to the engineer with a request that he shall settle, in all details, the form of the construction. Perhaps a few hours afterwards the same architect solemnly and—absurd as it may seem—in all honesty holds forth to students on the well-worn text that construction is the basis of all true design.

The reason for this failure on our part to place on a truer basis the more advanced branches of modern architectural design is undoubtedly a strongly-rooted dislike of the study of the—to most archi-

*Extracts from a paper read at last week's meeting of the Architectural Association.

jects—uncongenial subject of structural design.

Mr. Cubitt then criticised at some length the very inadequate instruction in practical subjects given at most of the architectural schools. An exception was made of the A.A., which, he said, afforded the most level-headed architectural education given anywhere.

That the subject of structural design can possibly be considered prosaic (continued Mr. Cubitt) is a most serious reflection on our modern method of training. The Roman architects and engineers who erected the mighty *thermæ*, aqueducts, bridges, and amphitheatres, which are still the wonder of the world, obviously did not consider the subject of structural design dull and uninteresting. The Gothic builders, it may be assumed, took as keen a delight in the logical scientific construction of their buildings as they did in the execution of the mouldings and carving with which such construction was embellished. Coming nearer to our own time, it is only reasonable to suppose that the "great mathematician" expended as much thought and labour on the fine structural scheme for the dome of St. Paul's as he did on the design of any other feature in the building. It is necessary for us to realise that structural design is not a mere matter of calculations and formulæ. These things, however necessary they may be, are but means to an end, such end the achievement of a living architecture, founded, as was the case with all the historic styles, on the basis of logical construction.

Discussion.

Mr. Max Clarke, proposing a vote of thanks, contended that, although subjects of the kind indicated by Mr. Cubitt might be distasteful, they might conceivably afford a welcome means of livelihood. By choice he would never make a survey of a piece of land or a schedule of dilapidations, but this sort of work formed a large part of his practice. It was really essential that an architect should be thoroughly acquainted with many of the minor branches of building which he now neglected. The more an architect knew of quantities, for instance, the more he would know of construction. With a little more of this sort of knowledge the "extras" nuisance and similar difficulties might easily be avoided.

Mr. Alec G. Horsnell, seconding the motion, refused to admit that the subjects dealt with by Mr. Cubitt were prosaic. Light and air cases, for example, gave a splendid opportunity for the study of human character, quite apart from the law. All these things, however, were not architecture, and had nothing to do with it. The architect's mind required something entirely different, and he (the speaker) continued to believe in the employment of specialists to deal with special work.

Mr. Louis Jacob said that the building law needed codifying. It could be done, and it would be a splendid thing for the architectural profession. The Colls case, for instance, if not altogether upset, was at least modified by *Kine v. Jolly*. If this case had not followed, architects would have felt much more at ease.

Mr. A. O. Collard suggested that a more appropriate title for Mr. Cubitt's paper would have been "The Mosaic in an Architect's Work," and there was no need at the present time, he continued, for an architect to be guilty of failing to comply

with building regulations. As soon as a scheme was outlined in pencil it should be submitted to the District Surveyor, who would be quite willing to give his expert advice before a start was made with the work; and at this stage errors could easily be rectified. The speaker concluded with an explanation of the A.A. curriculum. Adequate provision was made therein for the study of practical subjects, and these, he was glad to say, were followed with intense interest by the students.

Mr. Gerald C. Horsley, putting the vote of thanks, said that architects had so much to do with purely architectural subjects that they could find but little time to go deeply into others of less importance. Quantities were a special matter, and really engaged the attention of a lifetime. It was better, he thought, for the young practitioner not to take in hand things which he did not thoroughly understand. Structural design, of course, was of absorbing interest to the student, for it was impossible to make a satisfactory design without a knowledge of construction.

Mr. Cubitt, in reply, said that the architect should know enough of quantities not to touch them. Structural design, no matter whether in steel or reinforced concrete, was really the work of the architect, and it should never be delegated to an engineer.

INDIRECT ELECTRIC LIGHTING.

Electric lighting has undergone many developments and improvements during the last few years. These developments, however, have mostly been in the direction of increasing the efficiency and reducing the cost of electric light, little attention having been given to the æsthetic and hygienic aspects of illumination.

The metal filament lamp, with its low current consumption, has brought electric light within the reach of everyone, and the present problem is to find a method of employing the modern brilliant electric lamp in such a manner as to ensure a pleasant artistic and efficient result. Ordinary direct lighting by means of pendant or bracket lamps can never completely satisfy the requirements. However well the lamps may be shaded, there must necessarily be a degree of contrast between the brilliant light source and the surrounding walls, which is bad for the eyes—a contrast, indeed, which is for many people absolutely destructive of comfort. Hence it is necessary to effect a complete reversal of our present methods of direct lighting. It is useless to tinker with the problem by covering lamps with silk, or adopting some similar device. Indirect lighting offers the only solution: for in this system of illumination the lamps are completely hidden, the light being first thrown on to the ceiling, and thence reflected evenly over the room.

An indirect lighting fitting generally consists of a metal or plaster bowl containing upturned reflectors in which the lamps are placed, the bowl being either suspended from the ceiling by chains or attached to a rigid tube. As the light source is invisible, there can be no possibility of eye-strain or discomfort, the large area of the ceiling ensuring a uniform illumination free from exaggerated shadow. In rooms where ordinary direct lighting is employed the ceiling and upper portions of the walls are in semi-darkness. This, sometimes, may not be an objection, but in large reception rooms

it is very undesirable that every detail of ceiling and mural decoration should be invisible when artificially lighted at night time when the rooms are chiefly occupied. Not only does direct lighting fail to illuminate the ceiling and wall decorations, but its failure to do this carries with it the further disadvantage of making the room look smaller than it really is. Indirect lighting, on the other hand, has quite opposite effects. The light, coming as it does from the ceiling, gives equal illumination over all portions of the room, and every architectural feature is shown in its proper relief, with just the right amount of emphasis; in short, indirect lighting "raises the ceiling," *i.e.*, it makes the room seem loftier than it would otherwise appear to be. There is no suppression of detail, because every part of the room is adequately lighted, just as it would be in the daytime; indeed, the illumination given by this system is very similar to that of daylight coming through an obscured glass roof.

It is not claimed for indirect lighting that it gives an absolutely "colour-tone" illumination—that is, an illumination which shows colours exactly as they would appear by daylight, but by reason of its very complete diffusion it does give an illumination which is free from the virulent yellowness of the bare metal filament lamp.

The quality of the illumination given by indirect lighting is not garishly white, but just beautifully mellow. Everything in the room is plainly visible, and the pictures on the walls are properly lighted without the help of special picture lighting fittings.

Although it has been said that indirect lighting is shadowless, it must not be supposed that the effect is flat and uninteresting. It is only shadowless in the sense that daylight is shadowless when it comes through a glass proof. The perfect diffusion of the light makes deep unnatural shadows impossible, but the ordinary necessary contrast of light and shade is not interfered with in the least.

H. E. G.

A CONCRETE DOCK WALL.

In the course of a paper on the construction of the new dock at Methil (on the east coast of Scotland), which he read before a recent meeting of the Institution of Civil Engineers, Mr. B. Hall Blyth, junr., Assoc.M.Inst. C.E., described the erection of the sea wall, nearly a mile in length, which encloses the water area. For three-fourths of its length this wall is of concrete, and continues with a pitched slope where it is well above low water. The wall was constructed on a bag-work foundation up to 2 ft. 6 in. above low water, and from that point to quay-level is of block-work and mass concrete in situ. The width of the wall was originally planned to be 8 ft. at the top, with counterforts every 25 ft. and a backing of 20 ft. of rubble from the excavations. This, however, was not carried out, as no suitable rubble was found in the excavations. The wall therefore was built of concrete, 17 ft. thick. Its height varies according to the level of the bottom. At the north end it is about 20 ft. high to quay-level, while at the south end the maximum height is 40 ft. Two and a half years were required for the building of the wall, the contractors having been Messrs. Robert McAlpine and Sons, of Glasgow. Messrs. Blyth and Westland were the engineers for the works.

NEWS ITEMS.

Change of Address.

Mr. John Borrowman, A.R.I.B.A., has moved from Serjeants' Inn to No. 9, Adam Street, Adelphi, W.C.

The London County Hall.

The Council are now in position to proceed with the erection of the superstructure of the London County Hall, and have decided, accordingly, to invite tenders from selected firms.

An Architectural History in Russian.

Mr. Banister Fletcher's "History of Architecture on the Comparative Method" has been translated into Russian, after several years' labour, by M. Robert Böker, of St. Petersburg, a member of the Imperial Society of Russian Architects.

A Road-Making Exhibition.

An exhibition of road materials, appliances, and machinery used for the construction, maintenance, and improvements of roads is to be held at the Royal Horticultural Hall, Westminster, next June, in connection with the International Road Congress.

The New R.A.

Mr. H. H. La Thangue was elected a Royal Academician last week. He first exhibited at Burlington House in 1878. Since 1891 he has not been an absentee, and the purchase of his "Man with the Scythe" under the Chantrey Bequest in 1896 was followed in 1898 by his election to the Associateship.

A New London Bank.

The new building of the Bank of Adelaide in Leadenhall Street has just been completed, from designs by Mr. L. U. Grace, A.R.I.B.A. The old premises were only vacated in January last, and it says much for the activity of the builders (Messrs. Howell J. Williams, Ltd.) that the new premises on the same site were erected within seven months.

New Reinforced Concrete Loading Pier at Southend-on-Sea.

Constructional work is now proceeding on a new loading pier at Southend-on-Sea under the superintendence of Mr. Ernest J. Elford, M.I.C.E., the borough engineer. The pier, which will have a total length of 600 ft. when finished, has been designed for a working load of 5 cwt. per square foot. The whole work is being executed on the "Piketty system" of reinforced concrete. Mr. T. W. Pedrette, Enfield, N., is the contractor. The contract is for £11,000.

Repairing the South-West Tower of St. Paul's.

The south-west tower of St. Paul's Cathedral is undergoing external repair, for which purpose scaffolding has been erected. There is no question that the tower is structurally safe in every way. The work in process is simply that of facing and pointing some of the worn stones, and not of binding and straining the whole of the stonework, as suggested in the daily press. It has long been known and officially admitted that the south-west tower has a slight westward list, but Mr. Mervyn Macartney, architect to the Dean and Chapter, was able to report some three years ago that this falling away from the perpendicular in no way impaired the stability of the structure. The position to-day remains the same, and there is no cause for alarm.

Billiard Halls.

A billiard hall containing twenty-five tables is to be opened shortly in Herbert Avenue, Leicester. Mr. R. A. Hyatt Phipp, A.R.I.B.A., of Manchester, is the architect of the building.

The new billiard hall and picture theatre which has been erected at Fleetwood is ventilated by means of Shorland's patent exhaust roof ventilators, supplied by Messrs. E. H. Shorland and Brother, Ltd., of Failsworth, Manchester.

The Society of Architects' Ateliers.

As already announced in these columns the Society of Architects proposes to establish in London a series of ateliers, similar to those of the Beaux-Arts in Paris. The arrangements for the scheme are now being considered by a committee which comprises Lord Saye and Sele, Sir George Riddell, Mr. H. V. Lanchester, F.R.I.B.A., Mr. A. R. Jemmett, F.R.I.B.A., Mr. G. R. Lovell, A.R.I.B.A., Mr. Arthur Davis, F.R.I.B.A., Mr. E. C. P. Monson, F.R.I.B.A., and Mr. Percy B. Tubbs, F.R.I.B.A., president of the Society of Architects. The site of the first atelier has not yet been fixed, but will probably be in some central district, such as Soho.

Foreign Materials in the Building Trade

In the course of a circular letter addressed by the Union Jack Industries League to the borough councils of London, it is stated that complaints have recently reached the league from manufacturers supplying the building trade of the increased imports of foreign materials affecting this industry, and asking that the matter should be brought before the committees. The letter also refers to the remarks of the president of the Institution of Electrical Engineers, in his recent inaugural address, deploring the amount of foreign-made electrical plant that is now used in this country, and saying that it could be produced as cheaply in Great Britain as abroad.

TOWN-PLANNING SCHEMES IN
CANADA AND AUSTRALIA.

Mr. Thomas H. Mawson, recently appointed city planning expert to Calgary, has just returned from Canada, where his design for the re-planning of Stanley Park and Coal Harbour at Vancouver has been finally accepted. Mr. Mawson reports the greatest enthusiasm in Canada on the subject of town-planning, which has drawn crowded audiences to his lectures at the Universities and several Canadian clubs. A model city, to be called Meadlands, is to be put up by the British Columbia Electric Company on Vancouver Island, and Mr. Mawson has been instructed to prepare plans for the developments of Red Deer in Alberta and Brampton in Ontario. Several provincial Governments have consulted him as to the "lay-out" of vast tracts under their jurisdiction, and the Niagara Falls Parks Commissioners have also been in consultation with him in regard to their immense park system, which extends along the Canadian side from Brock Point to a point nearly opposite Buffalo, a distance of nearly twenty miles. This week Mr. Mawson has been giving final sittings in London to Sir Hubert von Herkomer, who is engaged on a portrait of the architect, who in turn is planning Sir Hubert's garden at Bushey.

In response to an invitation, the Garden Cities and Town-Planning Association is shortly sending a representative to Australia to deliver lectures in the chief centres. The undertaking is being financed by Anglo-Australians in London, whilst the association itself has undertaken the organisation.

During recent years the growth of such towns as Sydney, Melbourne, and Auckland has been so rapid that the respective authorities are already face to face with the problem of overcrowding and its inevitable conditions of insanitary modes of life. In Sydney nearly two millions have lately been spent on sweeping away slum areas and in rectifying the neglect of early days. But it is on the outskirts, where the making of new suburbs is proceeding at an astonishing rate, that modern methods of development are most required, and for this reason far-seeing and wealthy men of business, leaders of education, and public men are anxious that a campaign should be carried on for scientific town-planning on the lines which have already proved so successful in England.

NATIONAL FEDERATION OF
BUILDING TRADES EMPLOYERS.

We have received for notice a copy of the official report of the conference of secretaries of the National Federation of Building Trade Employers, which was held at Koh-i-noor House, Kingsway, London, on October 21st, with Mr. Jas. Wright, President of the Federation, in the chair. The chief feature of these annual conferences of secretaries is the reading and discussion of papers; the result being an invaluable interchange of experience and of opinions between men who are in the best possible position to receive and record impressions concerning the industry in which they are accredited leaders and representatives. At the conference under notice, the papers read included: "How to Prepare a Case for the Conciliation Board," by T. Smith; "Advisability of a Uniform Practice in Respect of the Percentages to be added to Quantities on to p.c. Sums and to Cover Workmen's Compensation and National Health and Unemployment Insurance," by W. J. Barton; "Irregularities in Tendering, and how to avoid them," by S. A. Dove; "The Control of Trade Conditions," by A. G. White, General Secretary; and "Principles which Should Govern Grants from Reserve Funds," by J. Davidson. The discussions on these papers are in each case briefly summarised, and the publication should be of much use and interest to members of the Federation.

LONDON MASTER BUILDERS'
ASSOCIATION.

A meeting of the Council of the London Master Builders' Association was held on November 21st, when the chair was occupied by Mr. James S. Holliday, president. The Law and Parliamentary Committee's report on legal cases and matters connected with the National Insurance Act was received and adopted, and the Report of the Conciliation Board was read and approved. Mr. H. C. Horswill, of Forest Gate, was elected an ordinary member, and Mr. A. George's nomination as an Associate member was accepted.

CONCRETE AND STEEL SECTION.

(MONTHLY.)

PROTECTION AND DECORATION OF CONCRETE AND CEMENT SURFACES.

Concrete is now used for so many and various architectural purposes wherein it is exposed in all its nakedness that the treatment of its surface becomes a matter for anxious consideration, on the score both of durability and appearance. It is generally admitted, of course, that concrete has great strength and will endure for ages, growing even stronger year by year, but that does not relieve us from its distressing sombre greyness, nor does it ensure that the surface will be durable against weather and climatic changes and "wear and tear," though the body itself may remain intact. In the first place we must recognise that the exigencies of practice will lead to the concrete being mixed with varying proportions of materials and of water, while even the amount of labour put into the work will vary from batch to batch. Thus the density and the resistance to weather and to abrasion will be different from point to point even of a supposedly uniform and unbroken surface.

All concrete requires tamping in position in order to ensure consolidation and to get rid of the voids and entrained air. A dry mixture of concrete is not favoured, because it requires an excessive amount of tamping and is very liable to be scamped or to disturb reinforcement. Where it comes against the shuttering or where it is levelled off as in a floor, the tamping, according to its extent and nature, will give a rough or smooth surface, either full of holes that expose the coarse material, or the reverse; and even if there are no cavities the surface is generally pitted by air bubbles. Tamping, too, brings up to the top the lighter and underburnt particles of cement, giving a white and weak film of material known as "laitance" or "scum." This defect may be overcome, but the neat cement that is worked to the face will often scale and show a multitude of hair cracks as a result of difference in contraction and expansion under changes of temperature between the body and the skin.

Furthermore, it is usual to employ lime-wash, whitening or grease as a covering to the moulds or centreing, with the object of enabling them to come away easily from the work and to leave sharp arrises and a fair finish. Such coatings give a poor appearance to the work and require much labour for removal or cleaning up; and even then only result in the cement skin being exposed, enabling the hair cracking to take place.

There is also another danger to be feared in the form of porosity. Insufficient tamping and imperfect proportioning are chiefly responsible for this defect. It is liable not only to cause disintegration of the surface, and perhaps of the body concrete, but to expose any embedded reinforcement to corrosion. Often with the object of closing pores, a cement wash or slurry is smeared over the face, this being only possible when the centreing has not been greased. Such a wash often scales, generally hair-cracks badly, and has a most depressing appearance.

It will be seen, therefore, that to get a good result for aesthetic reasons, and for very good practical reasons, too, the concrete must be watched very closely in manufacture. Every care must be taken in its proportioning, mixing, and putting in place, with the object of securing maximum density; while a paddle or spade should be worked against the moulds or shuttering to bring the fine material to the face. Even then it is desirable to remove the cement skins by means of brushing with wire brushes when green, or by rubbing down with sand and stone; if the surface has become too hard for these methods it may be tooled, washed with spirits of salt, or sand-blasted. Such methods are expensive, though by careful selection of the sand and coarse material a very good appearance can be given in this way. Recourse is frequently had to painting or distempering.

The usual kind of distemper or paint is of no use unless the work has seasoned for a long time, the lime in the cement causing the linseed oil of paint to saponify and the colour in paint or distemper to "fly." Eighteen months may be an insufficient time in which to leave work for such a treatment. There are, however, neutral substances not affected by chemical action which may be applied, and applied immediately. These will dry with a stone-like appearance, being at the same time acid and alkali proof; such coatings seem to be rapidly coming into favour. Fortunately, they seem to be fast in colour, to give water-tightness to the work, and to hide blemishes.

An allied problem, but not so much one of æsthetic appearance, is the treatment of "grano" or granitic finish to concrete floors. To get a floor to withstand the abrasion and not to "dust up" or "sand up" (as it is called), excessive trowelling, accompanied by the dusting of neat cement upon the surface, is sometimes had recourse to by the plasterers engaged on the work, but this should not be permitted. A finish of such granite concrete should be made by levelling with a rule and immediately trowelling with a metal trowel and never afterwards touching it; then the surface will be very durable, though not glossy. It may, perhaps, be a little uneven, but this is no detriment; on the contrary, it is an advantage in providing a good foothold. When, however, the plasterer comes along after an hour or so and begins to work it up again with his trowel, he breaks up the "initial set" of the cement and robs it of all strength, and the neat cement dusted on merely gives a thin skin, which has only to be worn through to expose the weak material below. Silicate of soda is often applied to prevent such dusting, but it is of very little avail. Dusting is particularly objectionable in some factories, etc., where delicate machinery can be injured by grit, or in warehouses, etc., where foodstuffs, leather and similar goods are stored. Special waterproof coatings are now obtainable, which not only indurate the surface, but give a glossy finish that offers resistance to oil, grease, or acid, substances which frequently cause concrete to disintegrate rapidly—and these finishes promise to be of great utility.

REINFORCED-CONCRETE FOR GASWORKS.

Commenting on a paper on the use of reinforced-concrete for gasworks read by Mr. J. Fisher, of Tottenham, before a recent meeting of the Southern District Association of Gas Engineers and Managers, our contemporary "The Gas World" points out that the great advantage of reinforced-concrete in retaining-wall construction is where bad ground is met with. "In soft ground, where a wall is built on the good old principle of base one-third of height, there is considerable risk of the weight of the structure itself leading to the failure of the foundation, which, as the late Sir Benjamin Baker pointed out, is almost the sole cause of failure of a properly proportioned wall. With reinforced-concrete, the weight of the structure is so small as to be almost negligible, whilst the weight of the retained material is utilised to provide resistance to the overturning tendency. Such a structure can be introduced without materially altering the conditions of stress on the soil. Probably the most masterly handling of reinforced-concrete in retaining walls is that of M. Rabut in a street railway in Paris, where an additional line of way was got by the substitution of a reinforced-concrete retaining wall for an existing retaining wall of the old type. The street was cantilevered out from the top of the retaining wall, and the extra accommodation was obtained without curtailing the width of the street or tunnelling as originally proposed."

Referring to the use of reinforced-concrete for tanks, our contemporary says: "Reinforced-concrete elevated tanks can be cheaply erected, their cost of maintenance is practically nil, and their strength and rigidity, owing to the monolithic nature of the tank and its supports, surprising. Where a gasholder has to be erected on a bad or doubtful foundation, a carefully designed and constructed reinforced-concrete tank will be a much better structure than one constructed of brick and puddle as of old; and reinforced concrete guide frames might with advantage be substituted for the steel structures now used. The lightness and strength of such reinforced-concrete structures are not readily grasped without demonstration. This is probably best obtained from countries where earthquakes have occurred. Thin, shell-like structures of reinforced-concrete are found intact, even after the most severe shocks, whilst buildings of masonry and brickwork, either alone or with steel framing, generally suffer severely. The absolute water-tightness of the material can be observed at any of the now numerous elevated water tanks where a thickness of five or six inches of reinforced-concrete unsupported over a considerable span may be seen resisting without leakage pressures of from 15 to 20 ft. of water."

Reinforced-concrete is on some hands considered to be suitable for the construction of trunk mains for gas, where the diameter exceeds 18 in.; and, at present prices, the change would effect a considerable saving in initial cost.

PRACTICAL POINTS IN REINFORCED CONCRETE CONSTRUCTION.

BY E. P. WELLS, J.P.

I PROPOSE to deal almost wholly with the practical side of reinforced concrete construction, as I consider that the more often attention is called to this most important part of the work the better it is for all concerned—for the engineer, the architect, the proprietor, and also the contractor. With regard to the first and the principal constituent in concrete—namely, Portland cement—it is strange, at this present day, how many engineers and architects still adhere to the old specification of coarse grinding, consequently requiring aeration of the cement. I recently came across a specification where it was stated the cement had to be spread on a floor for twenty-one days before being used. Those of us who are well acquainted with the present-day cement, and also its fine grinding, know how deleterious this is when great crushing strength is required. If cement is to be kept up to its full strength it is absolutely necessary that when it is received on the site of the works it should be stored in air-tight wooden bins; and if this is done, cement may be kept for many years and be just as good after the lapse of time as it was when freshly made, whereas if the cement be stored in sacks, and even a very small amount of moist air plays upon them, then the cement is rapidly hydrated and cakes in the sack. If, as is often the case, this cement be rubbed through a sieve, it becomes almost useless for purposes of concrete-making—by that I mean good concrete.

I have in my mind's eye a case of a contractor who bought cement in the month of October. The whole winter was a bad one, and he had very little opportunity of using the cement. It was stored in a shed through which the wind could blow freely, and he was rather astonished when the spring came and the cement was used that it would not set. He then wrote to the manufacturers, and when the matter was investigated the true cause of the mischief was found out. I have myself on many occasions experimented with cement that has been so hydrated, and it is astonishing the enormous reduction in the strength, so much so that it becomes almost useless for making concrete.

Aggregate.

Passing on from cement, one is led on to the careful choice in all aggregates, the proper grading of the same, and also, what is of more importance, the seeing that everything is absolutely clean and the water pure. I know it has been said that dirt is of some good in increasing the strength of cement concrete, but the only case that I can find where, over any period, a dirty aggregate increased the strength of the concrete was due to the fact that it had been mixed with a very over-clayed cement. It slowed down its setting action, and by that means did good; but if the test had been carried over a lengthy period, it would have been proved how fallacious is the advantage to concrete of dirt in any form. With regard to aggregates consisting of gravels that are dredged either from the river or from the bed of the ocean, it is very seldom that the proper proportion of sand to coarser material is obtained. There is only one gravel that I know where one

can see that the proportion is about correct, and that is obtained from the Spurn. In the ballast obtained from the Thames and along the East Coast there is at the present time a great excess of sand, and under any circumstances I would not in any way recommend that this aggregate should be used without separation of the larger particles from the finer and subsequent crushing of the coarse material.

The difference in the strength of concrete made with an excess of sand is very marked where the proportion of cement is not great; that is to say, 6 to 1 and 7 to 1 concrete with an excess of sand show very great falling off in strength, whereas with richer mixtures and an excess of sand, though there is a falling off in the early stages of hardening, after a few years the concrete will almost come up in strength to a concrete made in the correct proportions. Of course, it is well known that for all waterwork a large proportion of sand is required so as to get a perfectly dense mixture, but in no case must this be overdone.

In concrete for waterwork, it is not necessary to add anything to make it watertight. If concrete be properly made it will be absolutely impervious to moisture, and if it be found necessary to reduce the labour, some of these compounds of hydrated lime are, no doubt, of utility in decreasing porosity, but, at the same time, concrete so made is not improved in strength.

Moisture in Concrete.

With regard to reinforced work, it is far better that the concrete should have a slight excess of moisture than a deficiency. Certain experiences have shown that where steel has been put into concrete that was too dry, the air and moisture had got through the porous concrete to the steel and caused rapid corrosion. Excess of moisture, as we all know, decreases the crushing strength of the concrete; but at the same time, in nearly all structures there is generally such an excess of concrete in the compression member, especially where T-headed beams are used, that it is better to have the steel perfectly protected with a slightly weaker concrete than to have imperfect protection with a stronger concrete, because if imperfectly protected corrosion will be almost bound to take place, with consequent disruption of the concrete.

Excessive ramming in concrete is not at all necessary where it is made wet. It is far better to employ very light ramming and see that fine particles of the concrete are brought to the surface of the shuttering boards by means of steel slices or trowels. If this be done there will be very little danger of air finding its way through into the steel reinforcing, but a coarse aggregate first put in with an insufficiency of sand is almost always certain to have some porous parts through which the air and sulphur, especially in a London atmosphere, can attack the steel.

It may be well here to call attention to what I consider to be a most important point in reinforced concrete construction, namely, that as the concrete is being put into the work test-cubes should be made both for ascertaining the strength of the concrete *in situ* and exposed to the ordinary atmospheric conditions, and also to

ascertain in the laboratory the strength of a series of cubes made at the same time and kept under laboratory conditions. One set of cubes should be kept on the works exposed to the varying atmospheric conditions, and the other at the laboratory at the normal temperature, say, of 60 deg. Fahr.

Effect of Cold on Concrete.

Some years ago I made an experiment to see whether cold had any effect on concrete, and, if so, to what extent. I found that in the month of December, when the cubes were taken from about 60 deg. Fahr., and placed on a roof where the temperature fell to below freezing-point, a most alarming decrease took place in the crushing resistance of the concrete, and this remained so until such time as the weather became warmer, when the crushing resistance went up and was practically the same as shown by cubes made to the same gauging, but kept under normal conditions. This clearly shows that if a building is constructed in cold weather the crushing resistance of the concrete cubes kept on the works will be low, but if it be found that the other set of test-cubes, kept under laboratory conditions, shows a rapid increase in the strength, then it is only fair to assume that the concrete that has been exposed to the cold air will, with favourable conditions, increase in strength and attain the same strength as the laboratory experiments. The reason I am calling particular attention to this point is that if a building is constructed in the winter and the test loads are applied up to 50 per cent. in excess while the weather is cold, there may possibly be an excessive amount of deflection, owing to the fact that the strength of the concrete in compression is low, whereas if the experiment were held over until the warmer weather, when the compressive strength of the concrete was largely increased then the deflection would be practically nothing—of course, assuming that the work in the first instance had been properly designed.

The Need for Larger Tests.

The testing of floors and other works is, as a rule, carried out on much too small a scale. Testing should be spread over an area that will at least take in always two sets of secondary beams as well as two spans of main beams completely. By this method of testing, the beams always have their full load and the adjoining beams become unloaded, which gives the most severe form of test, unless absolute continuous construction be carried out. My experience has taught me that where concrete is good, that is to say, mixtures of 5 to 1 and richer, with the ordinary normal loading for which the structure was designed, unless most delicate instruments be used there will be no deflection recorded, whereas when weak concretes are used, namely, 6 to 1 and under, then the deflection at times becomes very great. In all cases in making deflection tests, they should be made, not only at the centre of the span but also at the walls, as very often it is found that a large amount of the so-called deflection is due entirely to the squeezing of the brickwork, owing to the fact that the reaction has not been spread over a sufficient area of brickwork. In no case ought the load on the brickwork to exceed eight

* Extracts from the presidential address to the Concrete Institute.

tons per square foot; by this means a good distribution is obtained and the brick walls are strengthened thereby.

Failures and their Causes.

In a great many works that I have seen where failures have taken place, the failures have been very largely attributable to shuttering and strutting. I have in mind cases of beams deflecting two or three inches after the concrete has been filled into the mould, this being due entirely to the strutting sinking into the soft ground underneath. In several cases this has caused what appeared like shear cracks at each abutment, though the work afterwards stood the test load satisfactorily. Still, such cracks made the beam look unsightly, and there would not have been the same adhesion between the concrete and steel, owing to this settlement, as if the boxes had remained perfectly true and level during the whole time the concrete was being put in and until the same were struck.

Strutting should always remain up as long as possible after the concrete has been placed in position; in fact, if it were not for the exigencies of trade and also the rapidity with which building works of the present day have to be erected, I should personally like to see all strutting remain up for very much longer periods than is generally allowed, because the harder concrete can get before removal and any weight can get thrown upon it the better it is for the structure as a whole. Unfortunately, in the present day the question of expense has to be very largely considered, and to allow strutting to remain up as long as one would like it would increase in a great many cases the cost of the work, and I am afraid it would become almost prohibitive. Of course, in cold weather strutting must be left up for periods 50 per cent. longer than is allowed in the summer-time, and a great many of the failures in this country, and more especially in America, are mainly traceable to the removal of the shuttering and strutting at too early a period in the life of the concrete. The concrete at the time of striking was weak, but had an extra fortnight or more been allowed for the hardening, then the works that have failed would no doubt have stood up.

Water in Concrete.

Before finishing with concrete-making would like to refer to water to be used therein. In this country, as a rule, water is almost invariably obtained from what is called a domestic source, namely, water supplied by large public companies who are extremely careful in what is sold to the public. Such being so, it is very rarely in England that one has to use water that does not come from the public supply; but there are cases where it is advisable carefully to examine the same before it is used. There are some places where the water is highly charged with gypsum compounds, and such being the case, it behoves one to see that there is no likelihood of failure taking place owing to an excess of this compound.

In the South of France, in Algeria, and in a great many districts waters are highly charged with gypsum, and so bad is this in places that concrete is absolutely dissolved and disrupted in less than two or three years. Whenever there is any doubt as to the quality of the water to be employed an analysis should be made beforehand, and so prevent what might lead to a disaster.

Defective Workmanship.

One of the great defects with regard to reinforced concrete is constantly raised

by those who have not had much to do with the subject and often by those who are largely connected with it, namely, the difficulty of getting steelwork placed in the position designed by the engineer. It is a difficult matter always to get the work placed in the designed position, owing to the carelessness of the British workman, whose idea seems to be to get the material into position as quickly as possible, no matter whether it be right or wrong, and in a great many cases if he has an opportunity of leaving the steel out he will do so. The only way to get over this difficulty is not to allow any concrete to be filled or poured in until the steelwork had been passed by the engineer or his representative. If this be done there will be very little danger to be apprehended, because if the steel is in the correct position, if the concrete is proved to be as good, as borne out by the *in situ* tests and by the laboratory tests, and if the strutting has not given way, then one may fairly assume that the work has been well carried out and will sustain all the loads for which it is designed, and that there will be no deflection, or else of such a slight nature that it is not worth troubling about. If, however, the steel be badly placed, the concrete be poor, and the strutting has failed, then there is no knowing what is going to be the result.

In a great many years of practical experience I have come to this conclusion, that even if there is a large deficiency of steel in the structure both in tension and in compression, and the concrete is of an excellent quality, there is hardly any chance of failure taking place, but if the steel is up to and even in excess of the requirements asked for, and by any chance the concrete be poor, then if an excessive load be placed upon the structure, there is nothing to prevent its failing. As I have stated before, a rich concrete is strong in crushing, tension, adhesion, and shear, whereas with poor concrete exactly the reverse is the case.

Some Beam Tests.

A series of experiments that I carried out some years ago of some beams gave for thirty-three days' test a factor of safety of $5\frac{1}{4}$ to 1; in three years the factor was over 9 to 1. The whole of this was due entirely to a very good concrete which was absolutely homogeneous throughout, and when the beams broke they failed only at the centre, the only place where cracks developed. There was no sign of shear, and the diameters of the rods where the failure took place were to all intents and purposes, the same diameters as when they were put in. These experiments, I think, simply show an enormous increase in the lever-arm, due to the rich concrete; in fact, in the case I now mention the lever-arm was practically the total depth from the axis of the tension members to the outside of the compression member of the beam; but even this will not account wholly for the enormous load that the beams carried, as the tests produced extraordinary stresses, both in the steel and also in the concrete itself.

Electrolysis.

A point that was investigated by the Science Committee some time ago was one which it is advisable, I think, for me to call attention to, and that is electrolysis. I have watched one work where this mischief occurred, and only about a couple of months ago I made a further examination and found that the mischief was still increasing. It is a moot point with some as to whether there is any electrolytic action or not, but personally

I have very little doubt upon the subject, so that it behoves all designers and contractors to see that there is no possible chance of electric currents finding their way into the steel reinforcing, because, should they do so, I do not think there is any doubt whatever that it will mean the eventual disruption of the concrete. It only requires the exercise of care to put a stop to this and to be perfectly certain that all cables throughout the reinforced concrete work are properly insulated, and that there are no stray currents wandering about the work.

"Too Much Mathematics."

I think a great many of my hearers will agree with me in regard to the calculations of reinforced concrete work that a great deal too much mathematics has been imported into the subject, and that common sense has had to take a back seat. If we were dealing with two materials, both of which were absolutely constant—that is to say, the concrete constant within a month after it was made in strength as the steel is immediately after it is rolled—then it would be possible to go in for mathematical formulæ of a high order; but where you have a material—*i.e.*, concrete—the strength of which, if all portions are good, is increasing day by day, and in some cases attaining a strength of three, four, or more times that which it was originally calculated for, how is it possible in these ways to formulate any formulæ which are even moderately correct? It is far better to use more common sense and simplify or formulate empirical rules which you know are absolutely safe in their application. It is no good trying to extract the square root of two—it is useless. I have seen cases where the stresses have been worked out to five places of decimals, and it could all have been done by mental arithmetic, and the result would have been so close that it was really not worth while troubling about.

I see cases constantly where rods are put into work varied in diameter to 32nds of an inch. That is not at all necessary. It wastes time on the work, and in a great many cases a wrong rod goes into the wrong place. It is far better to adhere in all cases to commercial sizes, never advancing beyond 16ths of an inch and if possible advancing only by 1/8ths, as by that means the size of the rod is clear to the naked eye and does not require a caliper to be put upon it to find out whether it is $\frac{3}{4}$ or $\frac{7}{8}$ of an inch. Such reinforcements as these simply show how designers lack common sense and bring the work into disrepute. Exactly the same thing takes place with calculations submitted for approval. A mass of figures will be carried out into millions where the whole lot can be simplified by reduction into tens or hundreds, and the elimination of anything beyond two places of decimals. The simpler calculations are made, the less liability there is of errors creeping in, and if an error does creep in, then, it is much easier to discover; but where a whole foolscap page of figures is used to arrive at a result, it means in a great many cases simply courting disaster, as well as being also a waste of time and expense with a view to possibly saving a pennyworth of steel.

It is far better to work in all cases to commercial sizes of rods, even if there be a slight deficiency in sectional area, than to put in multiples of rods of all diameters so as to make up a given sectional area. This entails an enormous amount of work,



NEW FACTORY FOR SIEMENS BROS. AT WOOLWICH. HERBERT AND HELLAND, ARCHITECTS.

not only upon the designer but also upon the foreman who has to take charge of the work, and upon everybody connected therewith, and it is of no practical value whatever. Therefore I should like to see in all rules made for reinforced concrete that common sense should enter more largely into the formulæ that are given to the world, and not a mass of mathematics provided, which the authors know perfectly well are even then empirical, because one material is a constant and the other is an inconstant.

Investigation of Failures.

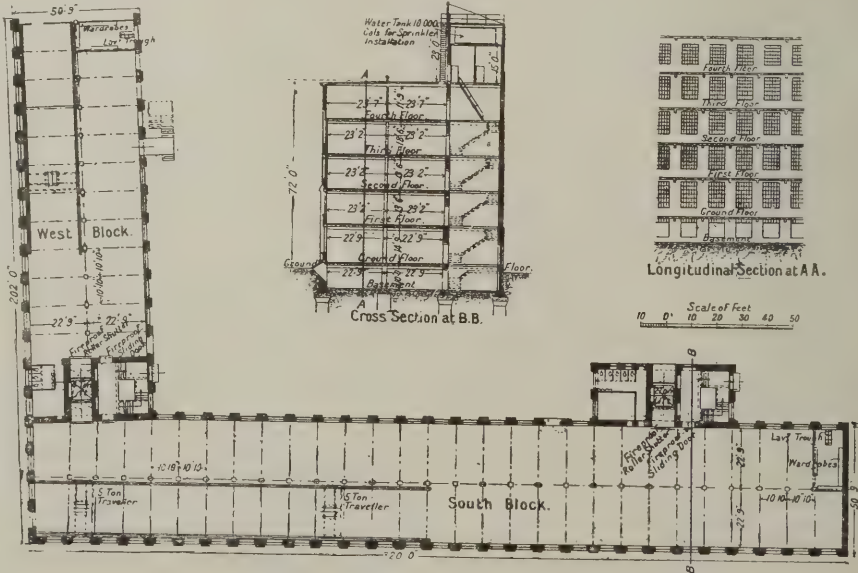
The Committees of the Concrete Institute have been seriously considering for a long time past the question of failures, and there is no doubt that if one could get at the whole facts of the cases with regard to failures they would be most instructive. As a rule, every work that fails has been kept in the background, for fear that the contractor or somebody in connection therewith would suffer either from the commercial point of view or the professional. It will be found, I think, as a rule, that the causes of failure are ones that can easily be allocated with the exercise of a little common sense and supervision. It is, as a rule, due to great carelessness on the part of foremen and workmen employed that the failures take place. Therefore it is advisable in all cases that the principal causes of failures should be known, in order that specifications may be made so rigid that there is little likelihood of these mishaps. It is the fear of failure that debars to a certain extent reinforced concrete from being used by many clients, and therefore it should be the object of all concerned with this matter, from a professional as well as from a commercial standpoint, to see that such care be exercised in the whole of the work, both as to designing, checking, and construction, that no one for one single instant should have any doubt but that reinforced concrete is for certain classes of work the best that can be employed.

A NEW THAMES-SIDE FACTORY.

The large factory shown in the accompanying illustrations has recently been erected for Messrs. Siemens Bros. and Co. on the south bank of the Thames between Greenwich and Woolwich. On plan the building is composed of two wings or blocks, forming at its junction an angle of 94½ deg. That known as the south block is 320 ft. in length, while the west block is 202 ft. in length, measured from the external point of intersection of the outer walls. The uniform width between the external faces of the walls is 50 ft. 9 in. The site of the building occupies an area of 28,620 square feet, or .657 acres. There are six floors, including the basement, giving a total floor area of 133,690 square feet, or 3.07 acres.

It was decided to support the building by concrete piers founded on sand. These

piers are 5 ft. by 3 ft. 6 in. under walls, 5 ft. by 4 ft. under columns, and 5 ft. by 5 ft. at corners. They varied in depth from 7 ft. below basement floor level to 14 ft. 9 in., the basement floor level being 7 ft. 6 in. below the general ground level. The base of each pier was extended on all sides by under-cutting, so that the distributed load on the sand did not exceed three tons per square foot. The soil was favourable for the amount of under-cutting required, and the inappreciable settlement of the building justified the method of foundation adopted. There are in all 153 piers, with a distance between centres longitudinally of 10 ft. 10 in. In the excavation for most of the piers water was encountered, but not more, in the worst cases, than could be dealt with by a couple of hand diaphragm pumps. Three thousand cubic yards of concrete were placed in piers and trenches, while



TYPICAL FLOOR PLAN AND SECTIONS.



NEW FACTORY AT WOOLWICH: REAR VIEW.

the total amount of excavation was about 10,000 cubic yards. The concrete was composed of 1 of Portland cement to 6 of Thames ballast, with a proportion of "plums." The foundation work was carried out departmentally and completed in ten weeks.

The superstructure is in brickwork for piers and walls, with reinforced-concrete floors, roof, and central columns. Fletton bricks were employed with mortar composed of 3 parts of sand to 1 of Portland cement in basement walls, and a mixture of 5 to 1 for the work above ground floor level. About two and a quarter million bricks were used. The loads on the floors are sustained by the brick piers and reinforced-concrete columns resting directly over the foundation piers.

The reinforcement for floors consists of Kahn Trussed Bars with rigid shear members and Kahn Rib Bars for beams, and Rib Bars for slabs. The concrete used was in the proportion of 1:2:4. The beams for all floors are 20 in. in depth by 10 in. in width, and the reinforcement varies according to the amount of super-load. A uniform thickness of 6 in. of concrete was adopted for slabs, with bars spaced from 8 in. to 12 in. between centres. The internal staircases and landings as well as lintels are built of reinforced concrete. About 3,500 cubic yards of concrete and 230 tons of steel reinforcement were used in the superstructure. For the basement floor 6 in. of plain concrete was laid with a rendered surface of 1 of cement to 2 of sand in the south block and an asphalt surface in the west block. The remaining floors are paved with creosoted wood blocks laid diagonally. The roof is covered with three-ply Ruberoid. On the ground floor provision is made for the erection of two 5-ton travelling cranes in the south block and one in the west block. The walls are lime-whited, with a dark grey distempered dado 5 ft. high, bordered by a line 1½ in. in width in darker tint. The ceilings were clear-coled and twice whitened.

The building is equipped with a complete system of automatic sprinklers and fire alarms. The sprinklers, which were put in by Messrs. Mather and Platt, Ltd., are controlled by two sets of 6 in. "wet"

installation valves, each set comprising the following: One improved stop valve, one patented automatic alarm with motor and gong for sounding a continuous alarm upon the outbreak of fire, one combined waste and testing valve with necessary waste pipe, and two 6-in. Bourdon pressure valves. The total number of sprinklers is 1,492, each sprinkler controlling an area of about 100 square feet. They are constructed to fuse at a temperature of 155 deg.

As supplementary to the sprinkler installation there are distributed throughout the building sixty hand fire extinguishers and 180 water buckets, besides four 2½-in. hydrants on each floor, and four outside ground hydrants. A liberal provision of fire-resisting doors was made, those leading to all staircases and in division walls being in teak with upper panels glazed with wire glass, while steel roller shutters in division walls further limit the ravages of fire in the event of an outbreak. An external staircase in iron is provided in each block for exit in cases of emergency.

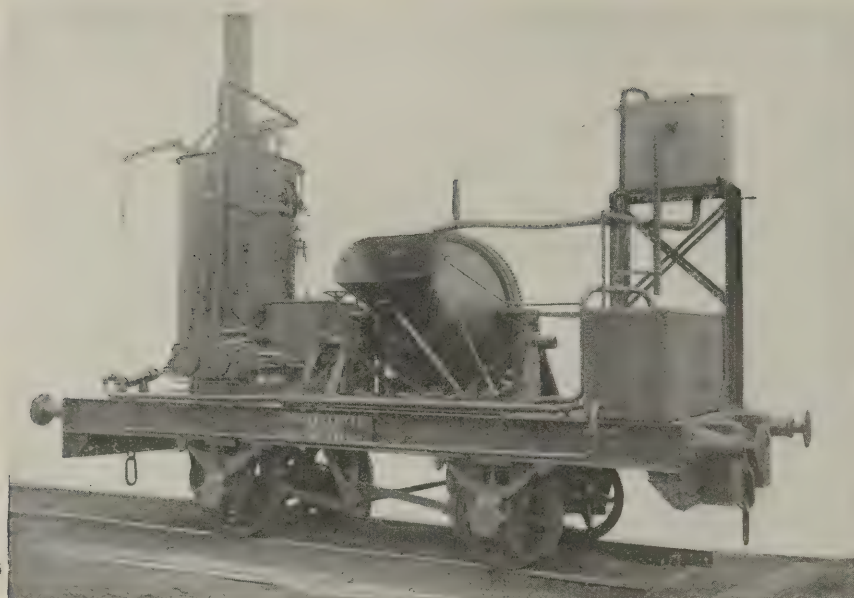
Ample lavatory accommodation is provided on each floor in both blocks, and in this connection reference need only be made to the use of glazed earthenware double washing troughs, each 6 ft. in length, and fitted with four valveless sprays on either side, with one controlling stop cock.

Within this building is prepared the raw rubber which forms the base of the manufactured goods produced for the insulation and waterproofing of wires and cables, and for ebonite articles for all kinds of electrical apparatus. All the machinery is driven by electric power generated on the works.

Mr. W. Dieselhorst, the general works manager, was responsible for the general design of the whole scheme, the architects being Messrs. Herbert and Helland, on the staff of the same firm. The contractors for the building were Messrs. Holland and Hannen. By the courtesy of the "Engineer" we are able to reproduce a plan, section, and elevation of the building.



NEW FACTORY AT WOOLWICH: VIEW ON FIRST FLOOR.



A TRAVELLING CONCRETE MIXER.

A TRAVELLING MIXING PLANT.

The special mixing plant shown in the accompanying illustration was recently supplied to a large firm of contractors by Messrs. Stothert and Pitt, Ltd., of Bath. The mixer consists of a standard No. 1 "Smith" mixer, mounted on a steel truck having wheels 2 ft. 6 in. in diameter, suitable for running on rails set to a gauge of 4 ft. 8½ in. An advantage of the equipment is that it is capable of mixing and travelling simultaneously under its own power. The mixer is driven by horizontal engines having two cylinders 6 in. in diameter by 9 in. stroke. The piston and connecting rods are of steel, the latter having marine pattern large ends. The glands of the pistons and valve rods are of gunmetal, the pistons themselves being of cast iron fitted with cast iron expanding rings. The eccentric sheaves and straps are also of cast iron. The crank shaft is of forged steel, running in gunmetal bearings fitted with loose caps, the feed pump being worked from the crosshead and

having the same stroke as the engine. The pump rod and the valve box are of gunmetal.

All the working parts of the engine and the valve gear have extra large wearing surfaces, an efficient means of lubrication being provided. The boiler is of the vertical type, 3 ft. 6 in. in diameter by 7 ft. 6 in. high, fitted with two cross tubes in the fire box. It is constructed entirely of Siemens mild steel for a working pressure of 80 lb. per sq. in., and was tested by hydraulic pressure to 160 lb. per sq. in. All the holes are drilled, and the vertical seams in the shell are double riveted.

The boiler contains the following fittings: Fire bars, removable chimney, man and mud hole furnace doors, spring-balance safety valve, set of water gauge fittings, two try cocks, blow-off cock, pressure gauge, and check valve. A feed water tank and rail washing tank of ample capacity are placed on a level with the footplate, so as to allow the water to gravitate into the pump. The tank is heated by the exhaust steam from the engines. A coal

bunker made of steel plates and neatly finished off with half-round iron is provided.

The travelling gear is actuated by double friction cones, so that the machine may be moved in either direction without stopping or reversing the engines. The motion is transmitted from the travelling cones by a vertical shaft running in gunmetal bushes. The rear axle is driven by bevel gear and pitch chain and sprocket by means of a cross shaft below the truck. A clutch is provided on the axle to throw out the travelling gear when the machine is being hauled by a locomotive.

The truck frame is constructed of rolled steel sections rigidly connected together and fitted with chequer plate platform, axle boxes and springs, spring buffers and dead buffers, brakes being fitted to the travelling wheels.

An automatic water tank, provided with flexible hose, connects to the mixer. All the levers for all the various motions are brought together in a convenient position on the driver's platform, guy rods being provided for holding the mixer drum when travelling. Shafts and axles are of mild steel throughout, accurately machined where necessary. All bearings are bushed with gunmetal, adjustable where practicable, efficient lubrication being ensured.

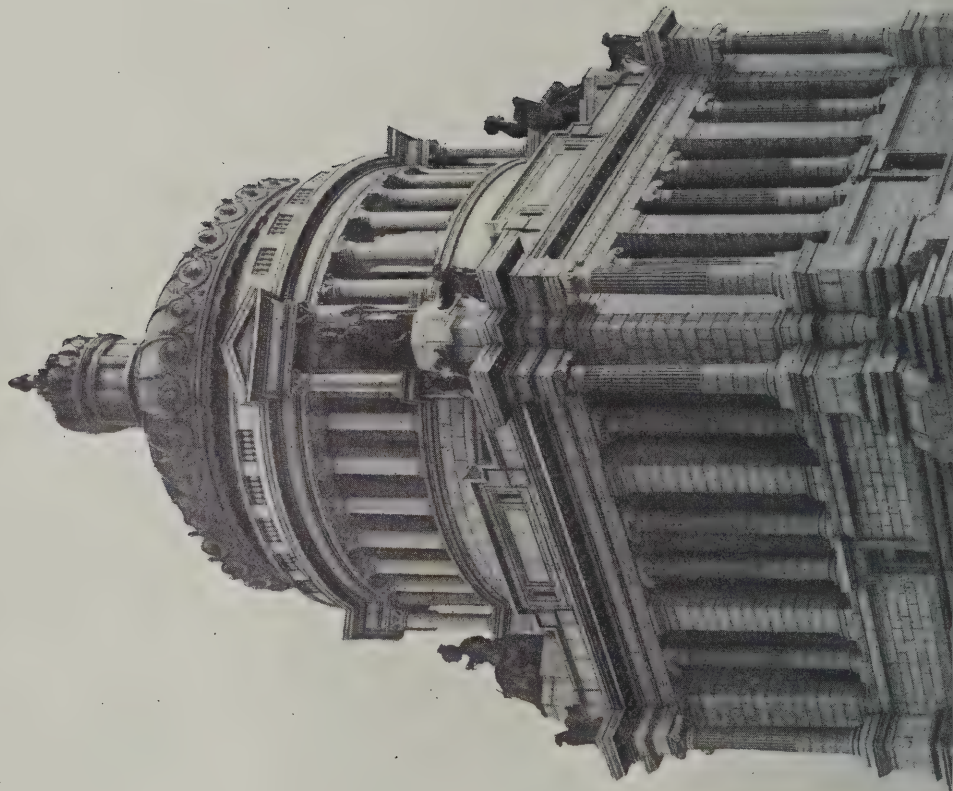
REINFORCED-CONCRETE
RESERVOIR, EAST COWES.

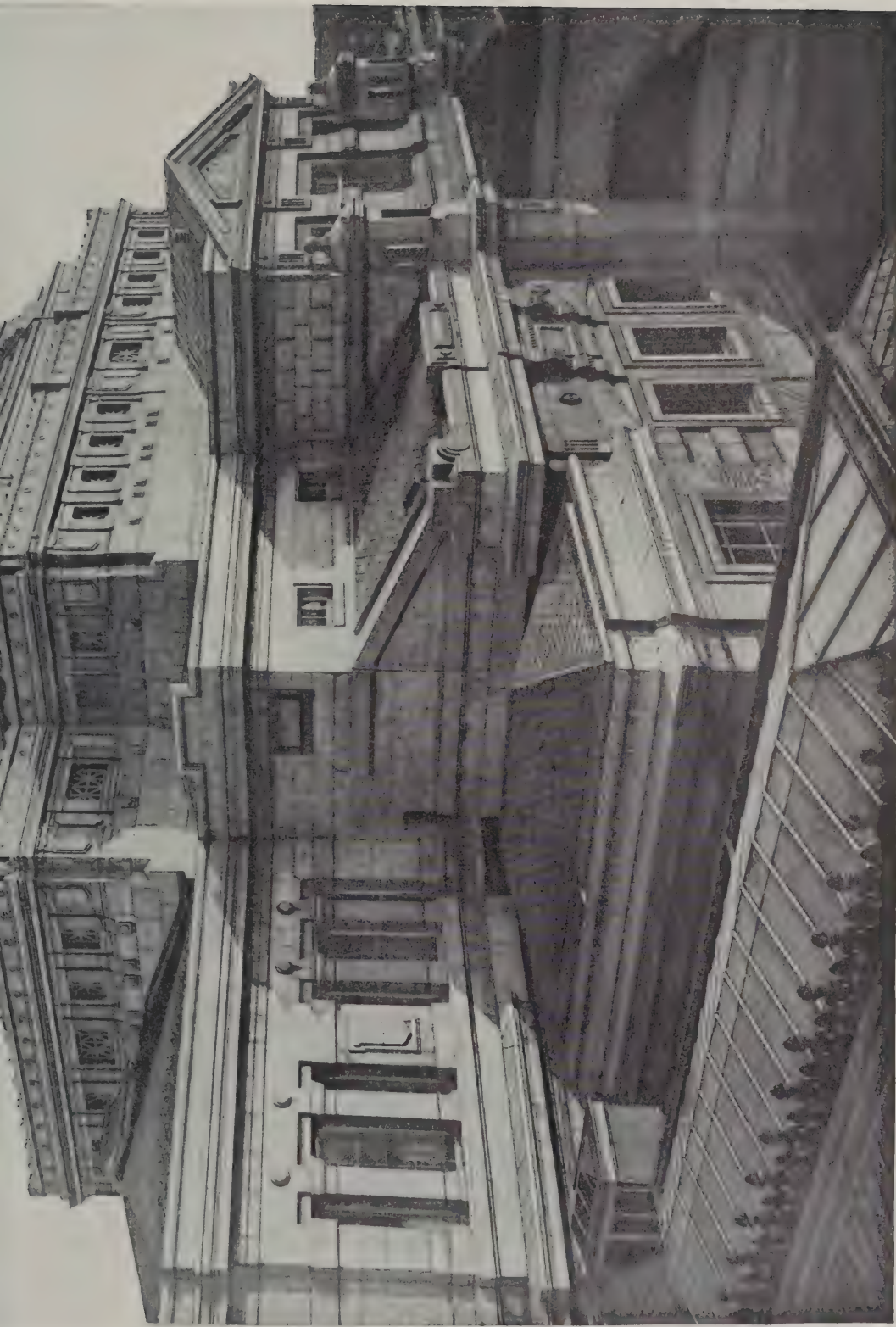
The reinforced-concrete reservoir illustrated below has just been completed for the East Cowes Urban District Council. The internal dimensions are 100 ft. by 100 ft., with a clear height of 17 ft. between floor and roof slab. A maximum depth of 16 ft. is provided for by the overflow, the total capacity being 1,000,000 gallons. A wall in the centre of the reservoir divides it into two compartments, which are capable of independent working. The reservoir, which was carried out on the Kahn system of reinforced-concrete, was waterproofed throughout with "Ceresit," supplied by the British Ceresit Waterproofing Co., Ltd. The contractors were Messrs. Brading and Sons, of East Cowes.



REINFORCED-CONCRETE RESERVOIR FOR EAST COWES URBAN DISTRICT COUNCIL.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, December 4th, 1912.





THE DOME OF THE PALAIS DE JUSTICE, BRUSSELS. J. POELAERT, ARCHITECT.

THE ARCHITECTS' & BUILDERS' JOURNAL.

Wednesday, December 11th, 1912.

Volume XXXVI. No. 934.

No. 11.



(From Piranesi.)



Photo: E. Dockrill.

WREN'S COLONNADE TO KING WILLIAM'S BLOCK, GREENWICH HOSPITAL.

THE ARCHITECTS' & BUILDERS' JOURNAL.

DECEMBER 11th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 934.

The Architecture of Delhi.

ONCE more, after a lapse of twenty years, popular interest is again aroused in architecture as a question of style. It is half a century since Barry employed Pugin to dress his Classic Parliament House with the romantic trimmings of a mediæval period. This he did to satisfy a section of British officialdom, who held that to adopt a Classic style was to give precedence to what was alien, to the neglect of a glorious heritage and that which was of native birth. It is of little moment to us as to whether officialdom, backed by strong public opinion, was justified in pressing its half-understood requirements upon its architects or not; we are inclined to think that it was, and we believe that in big issues, and on elemental questions when conviction takes hold of public opinion, its representatives may be trusted before its experts. We feel that when the Houses of Parliament were erected the British public was justified in demanding a style which was what it understood to be traditional, and we know that there is something elemental and convincing in the attitude of a large section of the British public when it asks that the new capital at Delhi shall be Indian. But, after all, does not the interest of both the expert architect and the trained historian lie, not so much in the fundamental and abstract requirement as in its translation and realised expression in concrete form? In the case of the Houses of Parliament, the British public wanted its building to be erected in a national style, but was quite incapable of comprehending that to emulate the work of its fathers and grandfathers—and, indeed, of its cousins across the sea (who, by the way, were the exponents of a great intellectual revival)—would be to perpetuate the national tradition far more effectively than to dismiss the achievements of such near relatives and resuscitate the more primitive successes of its earlier ancestors. And does not the same argument, and a similar solution, apply to Delhi? Even though we assume that all are agreed that the style of the new capital is to be "Indian," what to the historian and the modern architect does this mean to-day?

We know that the Alexandrian invasion exerted an enormous influence on the architecture of India; many of the shrines then erected were not dissimilar from those found in Greece and Asia Minor, and it was to the influence of the Greeks that the general use of stone and marble as building materials must be ascribed. But, passing over these remote periods, and the dark ages of India which succeeded them—a period extending over nearly 2,000 years, and whose monuments are the richest in the world—ultimately we find an entirely new innovation in the architecture of the Mogul Empire, and, later still, but not so late as to be distinctly modern, we have again the Residency architecture from the West. Early in the eighteenth century at Pondicherry a Governor's Palace was erected by the French in the manner of the architecture of Louis XIV., but even earlier still—so early as 1613—an English factory was erected in the Bombay Presi-

dency not unlike the Jacobean architecture of this country; since when practically all the buildings that have been erected in India under Western influence have been in accordance with the principles of Western styles. What, then, do we understand by "Indian architecture," using the term in its relation to the architecture of other countries to-day? If we assert that Residency architecture is not Indian, then we must also admit that Wren's architecture is not English, that American architecture is French, that French architecture is Italian, and so on.

Living at a time when the barriers of national independence are fast breaking down, and when in so short a period as the student days of a professional career what was one nation's architecture becomes the architecture of some other land, we cannot afford to waste time in quibbling over ownership of styles. But what we do want, and what we demand, is clear thinking as to what rightly would constitute modern Indian architecture. In order to justify its existence in the eyes of the civilised world, New Delhi, as an Imperial city, will need to embody all that modern art and science can contribute to its beauty and convenience, adapted to the peculiar requirements of a country dazzling in the splendour of Eastern brilliancy.

That and nothing less will be Indian architecture for to-day. But to be explicit, to venture from general observations to definite statements, our feeling is that New Delhi should be Greek, not Hellenic Greek, but Hellenistic Greek—the Greek of the Alexandrian period, with its rich ornament borrowed more than 2,000 years ago from India herself, with all the acroteria and refined completions which only marble and a brilliant climate can amply justify; a perfection of finish which in a sunless climate like ours may quite reasonably be discredited and quite justifiably be described as "spiky."

The architecture of McKim in its later and more monumental phases exemplifies what modern Indian architecture might be, as also does the Parisian work of yesterday, before the Ecole de Beaux Arts became obsessed with the glorification of the "cartouche." And even more typical still is the Palais de Justice at Brussels, the inspiration for which is said to have been derived from an Indian tomb.

We know that it is late in the day to influence the decision of official authority. We believe that in entrusting the Government buildings to Mr. Lutyens and in consulting Mr. Lutyens and Mr. Lanchester with regard to the general style of the architecture of New Delhi the Government were well advised. We understand that Lord Curzon is well disposed towards English Renaissance. We also understand that Mr. Lutyens is sympathetically inclined in the same direction. From a layman such a term as "English Renaissance" is sufficiently definite, but we should like to be assured that Mr. Lutyens is not going to give us a design for the Government buildings which is merely an embodiment of Wren's influence or any of the many fatuous derivations of Palladianism, which, though

legitimately included in the term "English Renaissance," are not the best phase of this style nor expressive of the "verve" of modern civilisation in its finest discernments.

We understand that Mr. Lanchester wishes to encourage as far as possible native talent and craftsmanship, of which there is an abundant supply. So far as the native quarters are concerned, and even in the accessories of the monumental and public buildings, native talent might provide the design, but native architecture is totally unsuited to the requirements of modern public buildings, and Indian craftsmen are quite as incapable as we British are of transmuting the architecture of Mogul temples and palaces into the architecture of a modern Government House.

By all means let the Indian craftsman accomplish all that he is capable of, but it would be as unfair to expect him to adapt his work to a modern public building as it would an English marble-mason to produce a Taj Mahal.

S. D. A.

The Question of Sanatoria.

ARCHITECTS, both in their professional capacity and as citizens, will soon have to face the problems involved in the provision of sanatoria under the Insurance Act. The whole matter is one of uncertainty, for it has yet to be determined which is the best means for stamping out the disease that kills, slowly and painfully, so many people in this country at the present day. So far as we are able to judge, it does not seem to be generally appreciated that the provision of buildings into which are drafted cases of consumption in a developed stage is not in itself any solution of the problem. Certainly, if poorly clad and poorly fed persons are thus treated they will show a decided improvement, but if they afterwards return to their homes and live in the old way, they cannot help falling back to the condition they were in prior to undergoing sanatorium treatment. Hence, it is obvious that the housing question is bound up with that of sanatoria. Under the Act local authorities will be required to provide these latter buildings, and it will devolve on architects to design them for erection at the lowest possible cost. But here at once we are confronted with the question as to the type of building to be erected. Is it to comprise a central block with administrative department and patients' common rooms, with bedroom wings stretching out so as to catch the sun as much as possible; or is there to be a minimum of congregating in permanent buildings and a maximum of living in detached huts? The answers to those questions will be better given a year or two hence than now, for some actual data derived from the experience of the national treatment of consumption will then be available. Meanwhile, what to us seems a far more hopeful provision is that of dispensaries, where patients are treated with tuberculin. Three or four such dispensaries have already been established in London, and many others in the provinces, and the immediate and lasting good which is effected through their agency affords material with which to build good hopes for the future. In these dispensaries, it should be explained, patients in the early stages of consumption are treated with a daily injection of tuberculin, and then go back to their work in the ordinary way; and after six or nine months of such treatment the tubercle bacillus is swept out of their system and they are free of the disease. It is, then, in these dispensaries, and in the provision of sanatoria for children—coupled with improved conditions of housing—that the hope of the future would appear to lie. The task is primarily a medical and a hygienic one, but just as architects are called upon to design schemes under the Town Planning Act, so they will have to consider the provision of buildings which can be erected for the treatment of consumptives by

daily injections—a comparatively simple matter—and those larger institutions where the attempt will be made to scourge out the disease in cases that are far gone.

The Westminster Hospital Site.

SOME very large schemes are being airily suggested in regard to the site of Westminster Hospital, which institution, as already noted in these columns, is to be removed to another district of London, where it can better serve the needs of those for whom the hospital was intended. Most of these schemes suggest that here is a great chance of effecting a vast improvement, and the main suggestion is that the Government should buy the site and preserve it as an open space, thus enabling, incidentally, the towers to be added to the Wesleyan Hall! We cannot see, however, what vast improvement is here to be effected from the point of view of civic thoroughfares, while, as regards open space, that is certainly not a crying need when St. James's Park is close at hand on one side and Parliament Square and the Thames are on the other. Moreover, the Westminster Guildhall is being erected on its old site, and there could be no great alteration made in view of that fact. Victoria Street offers no chance of "vistas" (which, by the way, are not the cardinal essentials of street planning), and it is rather foolish to think that the Government on every occasion can step in and buy up very costly sites as though it were a matter of a few pounds only.

The Building Trade Amalgamation.

THE loud-sounding proposals for a great solid body of ten separate building trade unions have been progressively diminishing, and the outcome of the conference which sat in London for three days last week may be regarded as quite mild in character. The statement issued at the conclusion of the proceedings was to the effect that the conference had decided upon a scheme for the amalgamation of the unions "for trade purposes only," and that a committee had been appointed to draw up an alternative scheme comprising friendly as well as trade benefits. This is quite another tone from that which characterised the first statements about the amalgamation, and the old whoop has now to confine itself to a further proposal for establishing a common fighting fund. This appears to us to be a far more practicable scheme from the unions' point of view, because it will leave each union to settle its own affairs, and will unite them only on the general policy of a strike. But the figures on which the recent ballot was taken, involving 12,156 against and 31,541 for, leave, as will be seen, a large proportion of dissentients, and it is these—as we have always thought—who are likely to prevent the effective unity which, in some quarters, has been described as so easy of realisation.

The Old G.P.O.

SIRKE'S façade of the old General Post Office is, after all, to go out of London, the committee of St. Chad's Hall, Durham, having applied to the First Commissioner of Works for the portico, at least. This is to be regretted, for the design was one worthy of being preserved in the metropolis. Nobody, however, appeared to want it, the Victoria and Albert Museum, the Royal Institute of British Architects, the King Edward Memorial Committee, and the London County Council having, in turn, had it offered to them, and, in turn, having politely declined the offer. So now the old stones will go to the North of England, and their re-erection will thus give a wide notoriety to a building that otherwise would never have been brought into general notice.

ITALIAN ARCHITECTS OF THE RENAISSANCE.

III.—Donato Angelo, called Bramante.

BY H. H. STATHAM, F.R.I.B.A.

THE confusion which so often exists between the real family names and the assumed names of the leading Italian artists of the Renaissance seems to reach its climax in the case of the great architect known to fame as Bramante. It seems rather difficult to discover what his real name actually was. He is often referred to, for no ascertainable reason, as "Bramante Lazzari," or "Lazzari Bramante." The English Dictionary of Architecture gives his name as "Donato Lazzari, called Bramante"; while his own signature is said to have been "Bramante Asdrualdino." This seems to be a confirmation of the statement that he was born (1444) at Asdrualdo, near Urbino, though Vasari gives it differently, and states that he was born "at Castel Durante, now called Urbina." His pupil, Cesariano, refers to him as "mio preceptore Donato cognomine Bramante Urbinate." Here there is no reference to any other name than his Christian name Donato, but there does seem to be evidence that the surname of his parents was Agnolo, or Angelo. The origin of his cognomen Bramante is said to have been the Italian word "bramare," "to desire ardently," having some reference to his temperament, though another Italian authority asserts that his parents lived at "the castle of Farneta, called Bramante." This, however, looks rather like an invented explanation, and the employment of a name to express temperament is quite in accordance with the habit of the period. Geymüller, the most distinguished modern student of his works, calls him "Donato Bramante of Urbino." At all events, "Bramante" he remains now for as long as architectural history lasts.

Like some other Renaissance architects, he began life as a painter, and is said to have been in this art the pupil of Piero della Francesca and of Mantegna. The tradition is that as a painter he decorated the walls of the palace of the Podesta at Bergamo, and there are still fragmentary frescoes in various parts of Lombardy that are ascribed to him. But it was as architect that he became famous, his first buildings having been carried out at Milan, where, according to Geymüller, he went in 1472, subsequently going to Rome about 1499, where he made his permanent abode for the remainder of his life. His work at Milan differs a good deal from that which he carried out at Rome, a fact which gave rise to the creation of a second "Bramante of Milan," to whom his buildings there have been sometimes ascribed, but who is dismissed by Geymüller as being an entirely mythical personage who never had any existence. Nor is there any need to suppose his existence. Bramante was not the only Renaissance architect with whom the direct influence of Roman remains proved a turning-point in his architectural career.

Geymüller, in his paper on "The School of Bramante," read a good many years ago at the Royal Institute of British Architects, says that "under Brunelleschi the Renaissance was merely Tuscan, i.e., had a provincial character; Alberti made it more Roman, and Bramante transferred it into an Italian style capable, from its inherent qualities, of becoming universal." This may be a little too strongly put. Geymüller had developed an enthusiasm for Bramante which may have led him to a little exaggeration at times, but his work at Milan has a certain provincial character about it from which he afterwards entirely freed himself. In the Church of Sta Maria presso S. Satiro at Milan he was guilty of the curious eccentricity of modelling on one of the walls, because the ground did not afford space for an apse, a perspective repre-

sentation of an apse on a flat wall—a thing which he certainly would not have done in his Roman days. The two-storied sacristy to the same church is, however, a fine work, with very delicate and graceful detail. The front to the Church of Abbiate Grasso at Milan is a curious and interesting design, which may be said to be almost Gothic in general feeling, in spite of the Classic detail. It is a portico consisting of a deep-set and lofty circular-headed arch between piers formed by three superimposed Orders of pilasters, two stories of coupled pilasters on each side below the springing of the arch, and single pilasters flanking the arch, and carrying a cornice and pediment above it. In spite of what Geymüller says about the more comprehensive character of Bramante's later work, one cannot but see in this front the work of an architect who had the capacity for being original in the treatment of Classic materials, and one may doubt whether, under the more scholarly and traditional influence under which he came after his arrival at Rome, he did not really throw overboard, without being conscious of it, some of his inherent capacity for original thinking in architectural design.

The dome and sacristy of S. Maria delle Grazie is another of his buildings at Milan, and here the treatment of the dome would seem to be another example of Bramante's originality in design; but Geymüller, whose opinion on the whole subject is the result of exceptional study of all the records connected with this architect, considers that the dome is not really Bramante's work, but only the lower portion of the building. S. Maria furnishes an example of a peculiar feature in Bramante's earlier architecture, illustrated also in various sketches by him which have been preserved, namely, the employment in an arch of two concentric archivolt mouldings, the space between them being filled in with a series of circular medallions. This



S. MARIA DELLE GRAZIE, MILAN.

is, of course, a kind of detail quite at variance with Classic tradition, and one which Bramante probably dropped in his later practice. It seems to be another bit of the originality of his earlier days, and, it must be confessed, not a very happy one.

Fergusson, in his "History of Modern Architecture," has assumed Bramante to have been the architect of two other buildings, his connection with which, however, does not seem to be at all certain. One of these is the courtyard of the Ospedale Maggiore at Milan, commenced in 1456 by Filarete, who finished one block of it. Fergusson's statement is that to this block Bramante added a portico, or arcade, carried on Ionic columns, and that when the building was completed by Ricchini, in 1621, that architect loyally carried out Bramante's design round the other three sides, and left it, as Fergusson says in one of his bursts of enthusiasm, "the finest thing of its kind in Italy." It may be so, but the evidence for the hand of Bramante in it seems rather doubtful. The other building is the church at Lodi, near Milan—a church on a Greek cross plan, with a proportionately very lofty central dome (too lofty for its width), the four arms of the plan forming apses, the eastern one semi-circular and the other three polygonal. I have found no other authority for ascribing this remarkable though small church to Bramante, but the internal evidence of the design is very strongly in favour of its ascription to him. A comparison of the plan of Lodi with one or two of the plans for St. Peter's among Bramante's sketches, and reproduced in Geymüller's "Projets Primitifs pour le Basilique de St. Pierre," shows a remarkable similarity: the Lodi plan being, in fact, just the same idea as the plans for St. Peter's, only on a smaller scale, and in a simpler form; and the use of repeated Orders of pilasters in the interior, one over the other, is exactly in the manner of Bramante in other acknowledged buildings of his Milanese period.

The influence of Rome seems to show itself in one of Bramante's earliest executed works there—the small circular church, or temple, called the Tempietto of S. Pietro in Montorio, in which the dignity and scholarly restraint of Classic architecture is at once apparent, and probably we may recognise in this circular build-



PORTICO OF THE OCTAGONAL COURTYARD AT THE
BELVEDERE, ROME.

ing surrounded with a colonnade the example of the Roman circular temple in the Forum Boarium, formerly called the Temple of Vesta. We now see only the main colonnade of this, the whole covered with a low-pitched roof put over it for protection. It is believed that the centre portion, within the solid walls, was originally roofed with a small dome, and Bramante's building is finished in the same manner. Were there at that time any remains of the original roof of the Roman temple which suggested this treatment to Bramante? It would be interesting to know.

The façade of the building called the Cancelleria is usually attributed to Bramante, but this has been questioned in respect of the fact that it is said to have been commenced before the date of Bramante's arrival in Rome. But there is always a difficulty in knowing exactly to what period in the development of an ancient building a date refers; it may refer to the foundation or commencement and not to its completed form. Letarouilly, at all events, credits the design to Bramante, and the character of the design is in favour of its being his. Some thirty or forty years earlier Alberti had built the Rucellai Palace at Florence, which forms a kind of half-way house between the true Classic of the Renaissance and the semi-Gothic style of the Riccardi and Strozzi Palaces, which adopted the Classic cornice without the Classic column or pilaster. Alberti's building shows equally-spaced pilasters on each of the three storeys, between which, in the two upper storeys, comes the form of round-arched window found in the Riccardi Palace. The Cancelleria is just the kind of step in advance towards Classicism which one can imagine Bramante to have made; the pilasters are there, but only in the two upper storeys. They are not equally spaced, in the monotonous manner adopted by Alberti, but are grouped two and two, leaving alternately a narrow space of blank wall and a wider space containing a window, and the pilasters are elevated on sur-bases, which was a common practice with Bramante, as seen in his sketch designs, and in the house in Via Governo Vecchio (Plate 13 in Letarouilly) ascribed to him. Moreover, the façade of the Adriano di Corneto Palace has always been ascribed to Bramante, and there can hardly be a question that this façade and that of the Cancelleria are by the same architect. The probabilities, therefore, seem in favour of the belief that the Cancelleria façade is really Bramante's design, whether or not he was architect for the whole building from its commencement.

The house in Via Governo Vecchio, just referred to, shows the same perception that is shown in the Cancelleria, that a ground storey without an Order, a simple mass of wall, offers the best base to a design with pilasters on the other storeys. Here the ground storey



CLOISTER OF S. MARIA DELLA PACE, ROME.

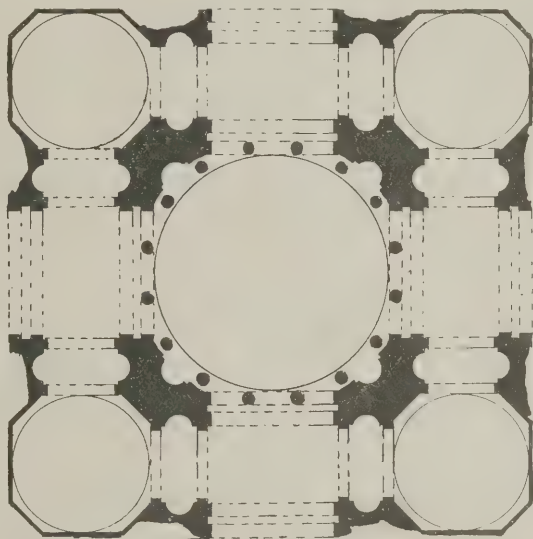
is rusticated walling, with three arched openings. Above this is a low first-floor storey with panelled pilasters without caps, and only a moulding to finish it instead of a complete cornice; above this come the two storeys with pilasters on pedestals. The whole shows a sense of the value of balance and contrast in the treatment of different storeys of a façade, which is a great advance on Alberti's mechanical treatment of the Rucellai façade, with its similar range of pilasters on every storey.

The work of Bramante at Rome which has been most admired, though it has been a good deal altered and spoiled since his time, is that which he did at the Vatican for Pope Julius II., who wished to connect the Belvedere, built by Innocent VIII., with the Vatican Palace. To effect this Bramante designed a large quadrangle with colonnaded side galleries, leading up by three levels to a great apse. He only carried out part of the work himself. The *loggie* in the old Vatican, which were decorated by Raphael, are also Bramante's architecture. But the most interesting records in illustration of Bramante's mind in architecture lie in the sketches, reproduced in facsimile in Geymüller's "*Projets Primitifs*" before referred to, for his ideas as to the design of St. Peter's. These are much less known than they ought to be, being now easily accessible in Geymüller's publication. They throw an entirely new light on Bramante's architectural conceptions for St. Peter's. On this head the greatest injustice has been done to him by the publication in Fergusson's "*Modern Architecture*" of the commonplace plan engraved on page 57 of that book as "*Plan of St. Peter's as Proposed by Bramante*." I had always wondered how it came to pass that an architect with such a reputation as Bramante should have produced no better an idea for St. Peter's than this, and a study of Geymüller's book shows at once that Bramante's conceptions for St. Peter's were of a different type from this plan, and indicate a very different order of genius. The one reproduced by Fergusson is a tri-apsal plan with a long three-aisled nave of very mechanical type. Fergusson appears to have taken it from a book by one Bonanni, published at Rome in 1715, called "*Numismata Summorum Pontificum Templi Vaticani fabricam indicantia*." The fact is that Bramante's leading ideas for St. Peter's nearly all take the shape of a Greek cross plan, with a central area. One plan for St. Peter's with a long nave does occur among Bramante's sketches, but this (to be described further on) is a very different affair from the plan given in Fergusson. The latter plan, or one exactly like it, is given among the "*Projets Primitifs*," but it is noted by Geymüller as a plan "published by Serlio and attributed to Raphael." The ascription of this commonplace plan to Bramante is a serious error in Fergusson's book, and should be corrected in any future edition.

The accompanying diagram gives the drawing out of Bramante's first sketch for St. Peter's, which is mainly for the treatment of the centre portion of the plan, the outlying portions being left unfinished. The sketches appear to have been done in red crayon on paper ruled in small squares. It will be noticed how cleverly he has contrived to make the columns keep in line with the pilasters of the piers and at the same time accommodate themselves to the circular plan of the dome. A more important sketch for the whole plan of St. Peter's is given on another plate, and is drawn out symmetrically by Geymüller in his Plate 4. This is a Greek cross plan with four equal arms, each terminating in an apse, with a dome over the central area, and this is the plan already referred to as presenting such a remarkable similarity to the plan of the church at Lodi, being practically the same idea on a larger scale. In a further sketch, drawn out again symmetrically by Geymüller on his Plate 12, Bramante has further elaborated the idea, in this case showing all the transepts and their apses with a range of interior piers with

aisles around them. The four extreme angles of the plan are emphasised by square compartments, obviously intended to be carried up as angle towers. On Plate 16 of his work Geymüller has shown an elevation of his own, giving his idea as to the manner in which this plan might have been worked out. It is a very fine drawing (reproduced as the Centre Plate in this issue), though perhaps not sufficiently Bramantesque in detail. But the ambition of Bramante in the design of St. Peter's went further even than this grand plan for the building. Plate 18 gives us a red sketch of Bramante's for a scheme in which the Greek cross plan of the cathedral is shown planted in the centre of a vast architectural quadrangle surrounded by internal colonnades. It is a rough enough sketch, but it suggests one of the grandest architectural conceptions ever put upon paper.

Further on, in Plate 26, we come for the first time on a sketch by Bramante for a plan with a long nave, with a tri-apsal arrangement at the east end, but it is something very different from the mechanically conceived plan given by Fergusson as Bramante's. It is sketched on a centre line, showing an alternative arrangement of the aisles on the opposite sides. On the left is shown a broad single aisle closed by an apse at the east



BRAMANTE'S FIRST IDEA FOR THE PLAN OF ST. PETER'S.



PLAN OF ST. PETER'S WITH FOUR GREAT APSSES AND AISLES
(Plate 12, Geymüller).

end (or what would be the east end in the usual ritual sense), divided from the nave by coupled columns arranged at right angles to the axis of the building, and no doubt intended to carry a grand arcade. These are divided into three equal spaces by solid piers, leaving four couples of columns between each pier. On the right-hand side this arrangement is modified; the large piers are placed so as to leave narrower bays eastward and westward, with only two sets of columns in each, the centre bay being twice as large, with four groups of columns between the piers, and an indication of a subsidiary dome to be erected over the centre of the nave. The aisle on this side is divided into three avenues, a wide one in the centre, opening at the end into the transepts, and a narrow one at each side, closed by a niche or small apse at the end, making the plan for a seven-aisled church. This also is a grand conception, but it is evident that Bramante's predilection was for the Greek cross type of plan.

All that Bramante really did at St. Peter's was to raise the four main piers for the dome up to the cornice, in which state they remained till Michelangelo finally achieved the erection of the crossing arches and the dome. At Bramante's death the main plan of the church was still undecided, and the four piers would have lent themselves to his plan as well as to Michelangelo's, which was not an improvement on Bramante's idea.

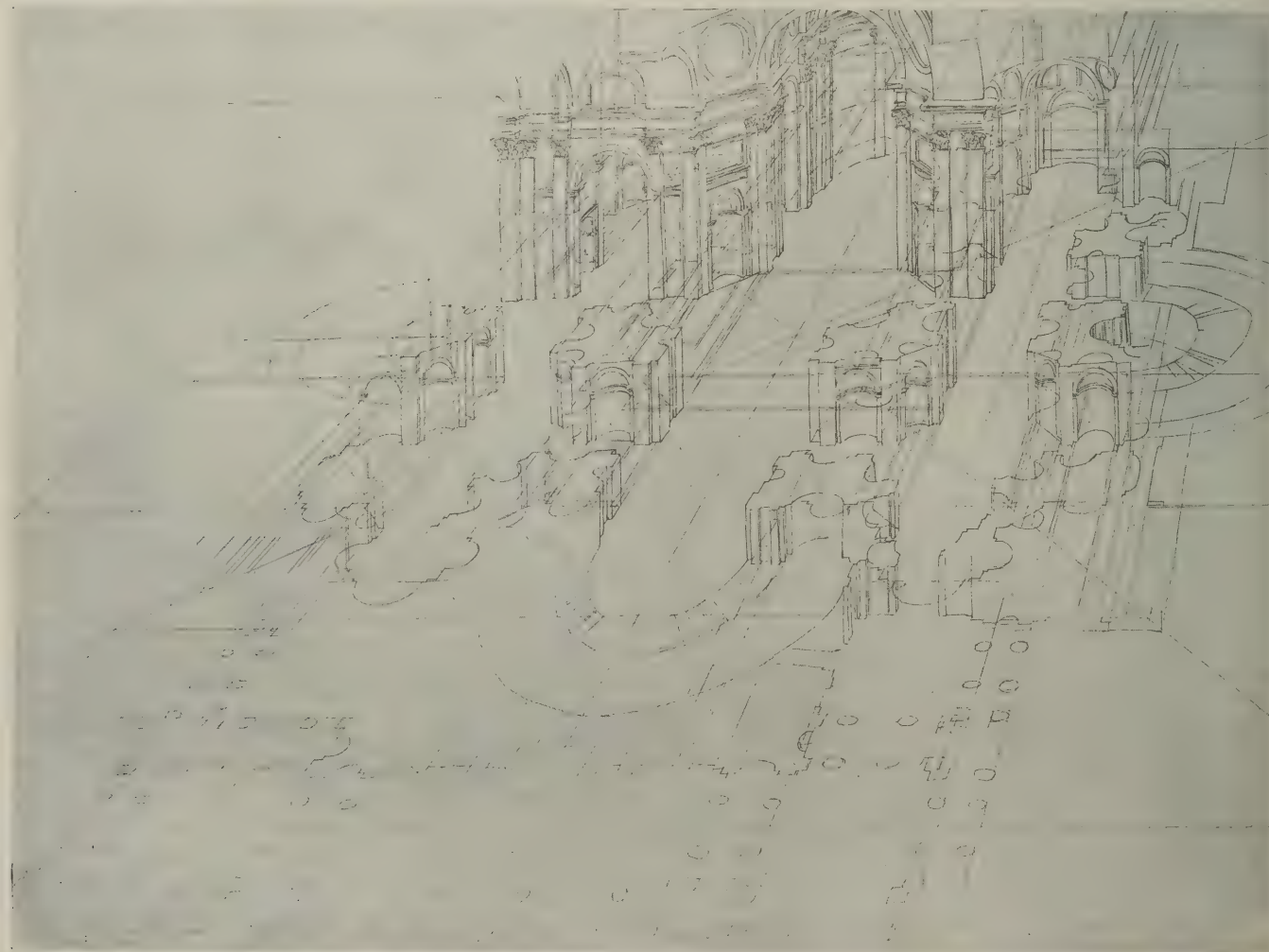
The French publication by Courajod and Geymüller, "Les Estampes attribuées à Bramante," gives reproductions on a smaller scale of two fine examples of those imaginative compositions in Classical architecture which seem to have had such a fascination for many of the Italian Renaissance architects, and subsequently for Inigo Jones.

It is of interest to note that the figure of the man stooping and describing something on the pavement with a pair of compasses, in Raphael's "School of Athens," is said to be a portrait of Bramante.

In conclusion, it seems pretty evident that the existing buildings known or believed to have been carried out by Bramante give a very inadequate idea of his genius, and of the greatness of his conceptions in architecture. It is in the study of the "Projets Primitifs pour le Basilique de St. Pierre" that we get at the real architectural mind of Donato Bramante.

ARCHITECTURAL RED-TAPEISM.

THERE has been an amusing sequel to a demand by the Local Government Board addressed to the Bridlington Board of Guardians. It appears that a certain small building was proposed to be erected in a field adjoining the workhouse. In response to a request, drawings of it were submitted to the Local Government Board for inspection, after which the official department asked for particulars of the appointment of a clerk of works. This request, however, was waived when it became known that the building in question was a pig-stye, estimated to cost £5! At the meeting of the Board of Guardians it was explained that the drawings had been prepared by the master of the workhouse and the clerk to the Board, and, bearing in mind the requisitions enumerated above, it is only in the nature of things that a member should have said it would not surprise him if the official department next insisted on the drawings being prepared by a "fully-qualified architect."



ISOMETRIC SKETCH OF ST. PETER'S ATTRIBUTED TO BRAMANTE.

HERE AND THERE.

GO where we may, there is hardly a railway station of any size in England which is not approached through a dismal line of backyards and sordid-looking houses. Sometimes they are on a level with us, sometimes we travel above them, but whichever way we see them they are repellent. It is these houses which give to a town its worst character. And nearly as depressing are the bleak, dirty warehouses and factories. One of the Sheffield newspapers, I notice, taking to heart such products of an industrial occupation, has been gazing on a more pleasant prospect—a reconstituted Sheffield wherein the civic conscience is dominant. This, we are assured, is no other than a conversion to artistic righteousness, the work of an Ugly Sheffield League "whose members shall preach with shattering force the fact that we have been content to dwell in a place which is a City of Destruction of all sense of beauty, whereas we might live in a City of Light." But here the pessimist—useless man that he be—stands hard by and points a dreadful finger at the fact in front of him. And the alteration of that fact is enough to make the stoutest lose heart. Still, the newspapers are the first means of reaching the public, and one is glad to see even the most Utopian views in print, especially when it is added that, after all, Sheffield cannot be the ugliest place whilst Manchester and Halifax endure.

But London, too, can offer ugliness enough—some of it in rich guise, for is not a garish, vulgar building in marble and gold almost as distressing as a motley area of mean houses? And, thinking of the metropolis, I call to mind the London Society. It is many long months since this new body was gathered together, heralded with trumpets, and set before a city that was to be humbly grateful for its constitution. But since that glorious start I have heard nothing of it. London has certainly not quite reformed itself in civic matters meanwhile: there have been many occasions when the London Society might have proclaimed its power—backed with such a goodly array of prominent names. Yet no such proof of its veritable authority has been vouchsafed, and, with charity, one can only assume that it has been doing great deeds in secret. But suppose it should be moribund?

Passing a block of flats the other day I noticed once more a detail in the design of metalwork which deserves more attention than it usually receives. In this case it was a balcony front in cast iron, by a well-known architect. The general design, comprising a square framework with enclosing scrolls, was admirable; but there were large swags hanging between the scrolls that were very displeasing because they had become so altered in effect by exposure as to be altogether different from the design on paper. As seen from the other side of the street, these swags looked very heavy and clumsy, and a closer inspection revealed the reason. They had a surface enrichment of laurel leaves, after the manner of Roman days, and this no doubt looked excellent on the architect's drawing, for every leaf was there clearly noticeable, and the total effect of the swag was graceful and light. I have no doubt, too, that the finished work, bright and clean, looked excellent in the maker's workshops. But since that day the soot and grime of a modern city have been coating the surface, and, in fact, have so toned down the relief that the swags now look rather as if they were plain pieces of metal. I have seen the same result in bronze-work when exposed, many a delightful piece of enrichment being thus rendered null. It would be better, therefore, in such cases either to increase the relief or to adopt some form of piercing, so as to get an effect of silhouette rather than of surface treatment.

Another unsatisfactory form of metalwork is that

which includes balusters and bars extremely flattened in appearance—as though, originally round, they had been squashed. All these and kindred new treatments are no advance on old models; for, in ironwork, it would be difficult to improve upon the work which was done in England during the eighteenth century.

* * * *

The numbering of houses in London must be somewhat baffling to, say, a Parisian, and the methods adopted in suburban areas even more bewildering. You walk along a street in search of No. 64, and, beginning at the beginning—if you have the good fortune to start at the right end—you advance merrily past 9, 11, 13, and so on, when suddenly another street intervenes, and there is a break. Intending to continue, you cross, but the next house is not numbered, nor its neighbour; you look across the street and see No. 182, and so you are left wondering. In the swell thoroughfares the problem is even more complex, for, in the attempt to be counted with the best, the side streets join in, and you find a few numbers going round the corner, and then on again. But even then it is an affair of numbers only. Lord Rosebery will be found in No. 38, Berkeley Square, and Lord Haldane in No. 28, Queen Anne's Gate. In the suburbs, however, is a far greater puzzle. The numbers here disappear altogether—it is not genteel to have them. You arrive in a road looking for your friend's house. If it is called "Azalea Villa" and you arrive on December 11th, the absence of luxuriant growths of tropical shrubs will be a grievous loss of indication, while if the house be called "The Firs," and there is not a fir in sight, your plight will be as bad. No one will have heard of your friend's house, and there will be nothing else but to tread the weary road reading the names on the gates—"Rose Cottage," "The Laurels," "Sans Souci," and the rest—till you see your friend in the garden wondering how you have been so dull-witted in discovering where he lived.

* * * *

Mr. Lewis Hind is a writer on art who is always entertaining, and uncommonly sane. So, when he tells me that the art of wall-painting in this country is to be revolutionised by Matisse and Augustus John, I am willing to believe him. Yet a visit to the Grafton Galleries fills me with alarm, for there, in the midst of the latest Post-Impressionists, is "The Dance" by Matisse, whilst John, at the New English Art Club, gives us another expression of "temperament" in "The Mumpers." No longer, Mr. Lewis Hind assures us, will our craftsmen be content to paint Academy pictures and call them mural paintings because it is their fate to be affixed to the walls of places like the Royal Exchange. Our eyes have been liberated by Matisse and John. And certainly I must admit to have blinked before "The Dance"—the most astounding piece of painting I have seen for a long time. The Post-Impressionists are men who take their art seriously. Their efforts, however, are misplaced. In the Grafton Galleries only a few people can (or dare) laugh at them. But published in colour I am sure their pictures would be immensely captivating at this Christmas time. We are constantly being told what a dearth there is of really good children's books; how long it is since Kipling wrote about Kaa's Hunting and Mowgli's Brothers, and how many eons have passed since Lewis Carroll recounted the adventures of Alice. Yet here is a whole gallery-full of pictures that will make everybody laugh—old and young. And if this is but the beginning of the new art of wall-painting, why, then, all England will soon be rocking its sides. But I forget—these men are serious workers!

UBIQUE.

NORMAN SHAW AS A DRAUGHTSMAN.

IN the course of some personal recollections of the late Mr. Norman Shaw, published in the December issue of the "Architectural Review," Mr. Arthur Keen, F.R.I.B.A., gives some very interesting information about Mr. Shaw's draughtsmanship. He says:—

In looking back over a good many years to the time one spent in his office, perhaps the outstanding thing in connection with Norman Shaw was the daily miracle of his output of work. Each succeeding thing that appeared in the office had such a look of obvious reasonable treatment that its production, although sufficiently remarkable, did not, at the time, seem extraordinary; but regarded in the light of one's knowledge of the strenuous toil involved in the production of a set of sound working drawings for a church or a big house the whole becomes a marvel. Five or six well-filled sheets of eighth-scale drawings would suddenly appear, ready for tracing and sending to the quantity surveyor, drawn throughout in a clear, bright line of amazing quality, without any mark of correction or redrawing, except in the rarest cases, and yet presenting a design of such novelty that, in most hands, constant alteration would have been unavoidable. These would very likely be followed in a short time—a week or two it seemed—by another set equally perfect, and perhaps altogether different in style from the other; yet one knew that in the interval much of the author's time had been spent in visiting works in Yorkshire or Shropshire, or in producing a large perspective drawing. In most cases no preliminary sketches were seen, beyond, perhaps, a ground plan prepared for the client's inspection, and the inevitable conclusion was that these drawings were made with the directness and precision of one who draws something that stands complete in absolute form before him. When one saw Mr. Shaw actually working on a drawing this proved to be, in fact, his method: a few light preliminary lines, and then steady drawing as crisp and definite as if an accurate copy rather than an original design were being made. Even when much of the draughtsmanship was done by another hand it would proceed on the basis of some finely-finished portions that furnished authority for the whole.

For instance, when the Alliance building in St. James's Street was put in hand, Mr. Shaw was away on the Continent for his health; a measured sketch of the site was sent to him, and he quickly sent back a beautiful little scale-drawing of the Pall Mall elevation drawn in ink and giving practically the exact design that was in due time executed—all the particular characteristics of it thought out and developed, and the sense of richness in combination with fine firm lines, that is so distinctive of the building, fully expressed. Later he produced large scale plans of the upper floors that were a wonder of skill and ingenuity.

Drawing was such an active pleasure to him that he would spend his time with utterly unnecessary labour in working up elevations in the manner of pen-and-ink perspectives, colouring details or printing headings, that someone else might well have done, for the sheer enjoyment of it. He would say it was such a rest to do work of this kind, just as Morris put in the little dots all over the background of a pattern because he liked to do the easy work after having the trouble of preparing the design. . . . The crisp, clear character of the draughtsmanship was maintained right up to the last. A very few years ago, when he was well on towards eighty years of age, he let me make a drawing for him of an important London street front, and the pencil sketch from which I worked was a clean, fresh drawing, wonderfully accurately set out, and with all profiles and ornament so sharp that a mechanical enlargement of it would almost have made a good working detail. Even in this instance he did the printing on my drawing himself, so that it should be "uniform with the others."

A REMARKABLE ISSUE.

THE Special Issue which, as in former years, we shall publish at the end of this month will be in many ways a remarkable one. The chief build-ings of the year will be shown by a fine series of photographic illustrations—in themselves an admirable record—but of paramount interest and value will be a series of forty plates of details of domestic work by well-known architects, including Mr. Ernest Newton, Mr. E. L. Lutyens, Mr. E. Guy Dawber, Mr. Mervyn Macartney, Mr. E. J. May, Mr. E. Turner Powell, Professor C. H. Reilly, Mr. Oswald P. Milne, Mr. Ronald P. Jones, Mr. F. S. Chesterton, Messrs. Horace Field and Simmons, Messrs. Richardson and Gill, Messrs. Geoffrey Lucas and Lodge, Mr. T. Millwood Wilson, Mr. J. M. W. Halley, Mr. Evelyn Hellicar, Messrs. Woodhouse, Corbett, and Dean, Mr. W. H. Bidlake, Mr. Percy Newton, Mr. C. H. B. Quennell, and Mr. Leonard J. Williams.

These forty plates have all been specially prepared from the architects' working drawings, and they give the practical details of both the design and construction; they include, also, small photographic illustrations of the executed work, thus making the representation complete. Chimney-pieces, staircases, panelling, doors, and similar interior details are shown in this way, and, in addition, there will be a number of most useful plates of dressers, pantries, serveries, storeroom fittings, and other practical details not to be found in any other publication.

Last year's Special Issue, with its photographs and plans of garden suburb houses, went out of print very soon after publication. This year we anticipate an even greater demand, and as not even the most strongly-worded letters from old subscribers will produce further copies when once the issue is exhausted, we would especially urge all readers to place their orders for this Special Issue *without delay*, either with their newsagent or direct with the Publisher, at Caxton House, Westminster.

The issue will be an additional one, dated December 31st, and will be published at 1s. net (postage $\frac{1}{2}$ d. extra).

R.I.B.A. PROBLEMS IN DESIGN.

CONTINUING our series of illustrations of approved designs for Subject V. (a)—a Picture Gallery—we publish on page 627 of this issue the design by Mr. B. A. Miller, of the Liverpool School of Architecture. The particulars stated that the building was to be considered as being situated in a public park, and it was to comprise six galleries of varying size, with cloak-room, etc., in connection with them. Plans, sections, and elevations were required to be drawn to $\frac{1}{8}$ in. scale and details to $\frac{1}{2}$ in. scale.

MODERN SMALL HOUSES.

A GARDENER'S lodge at Oxford, illustrated on page 629 of this issue, is the seventh example in our new series of modern small houses. Mr. Clough Williams-Ellis, of London, W.C., is the architect. The cottage was planned to fit a peculiar triangular site next to an entrance gate, and the fenestration had to be so arranged that no windows should overlook the gardens of the mansion, nor the house itself. Low cost was another factor in the problem. As ultimately carried out, the cottage cost about £250, the mansard roof having been responsible for the greatest part of the economy effected. Attention is drawn to the ends of the floor joists projecting beyond the wall. The architect's intention in adopting such a treatment was to give the suggestion of a dentil course, the idea of a cornice being supplied by the ogee gutter.

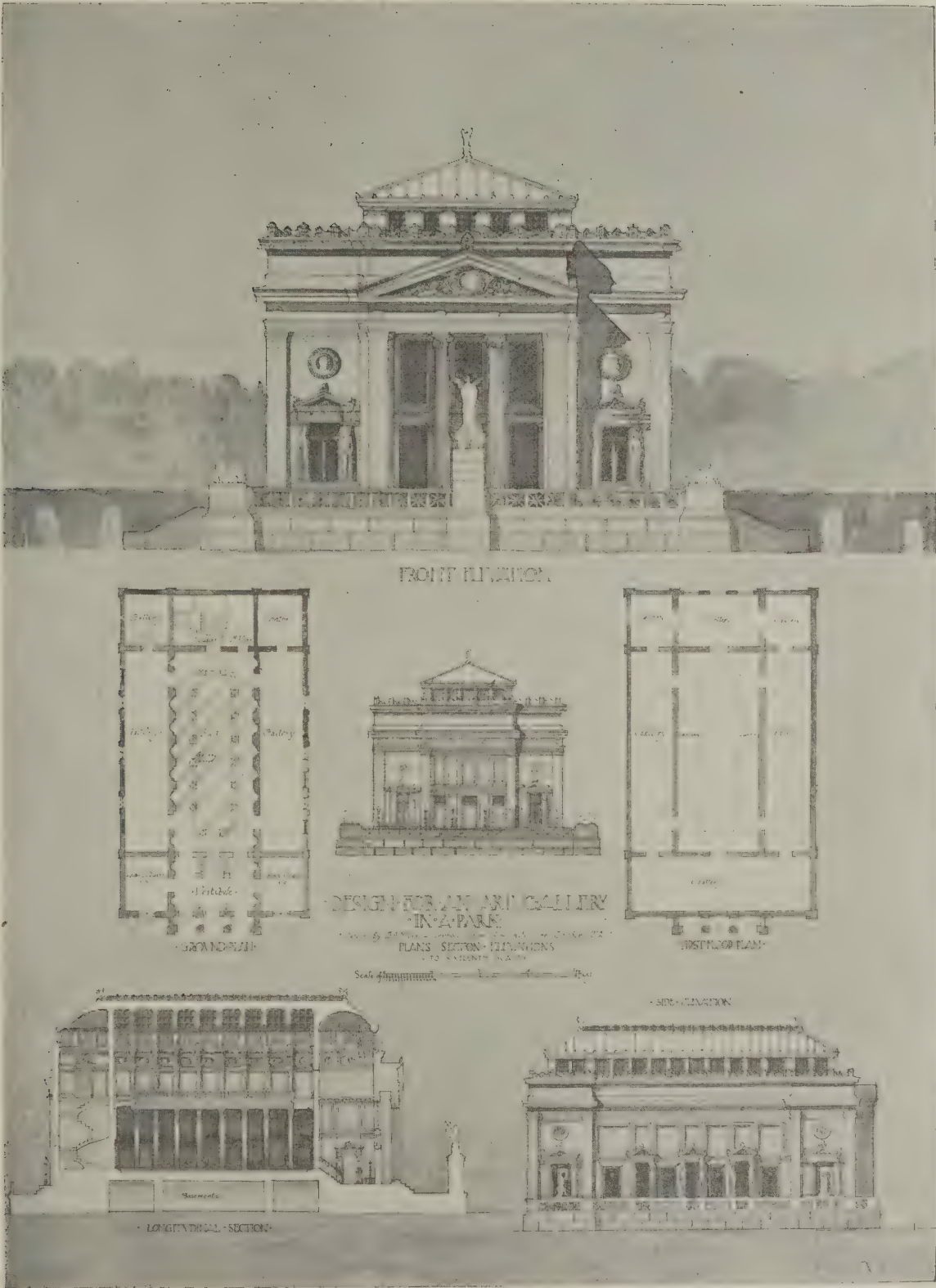


ENTRANCE TO AMERICAN SECURITY AND TRUST COMPANY BUILDING, WASHINGTON.

YORK AND SAWYER, ARCHITECTS.

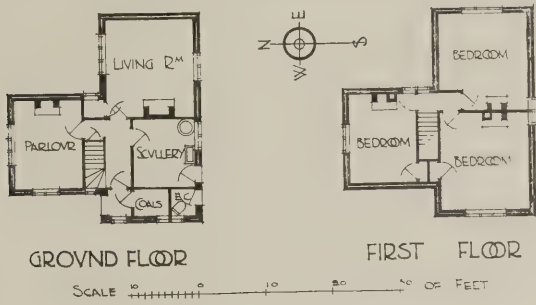
OF THE
UNIVERSITY OF CALIFORNIA

STUDENTS' PAGE.



TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION: APPROVED DESIGN FOR SUBJECT V. (a).

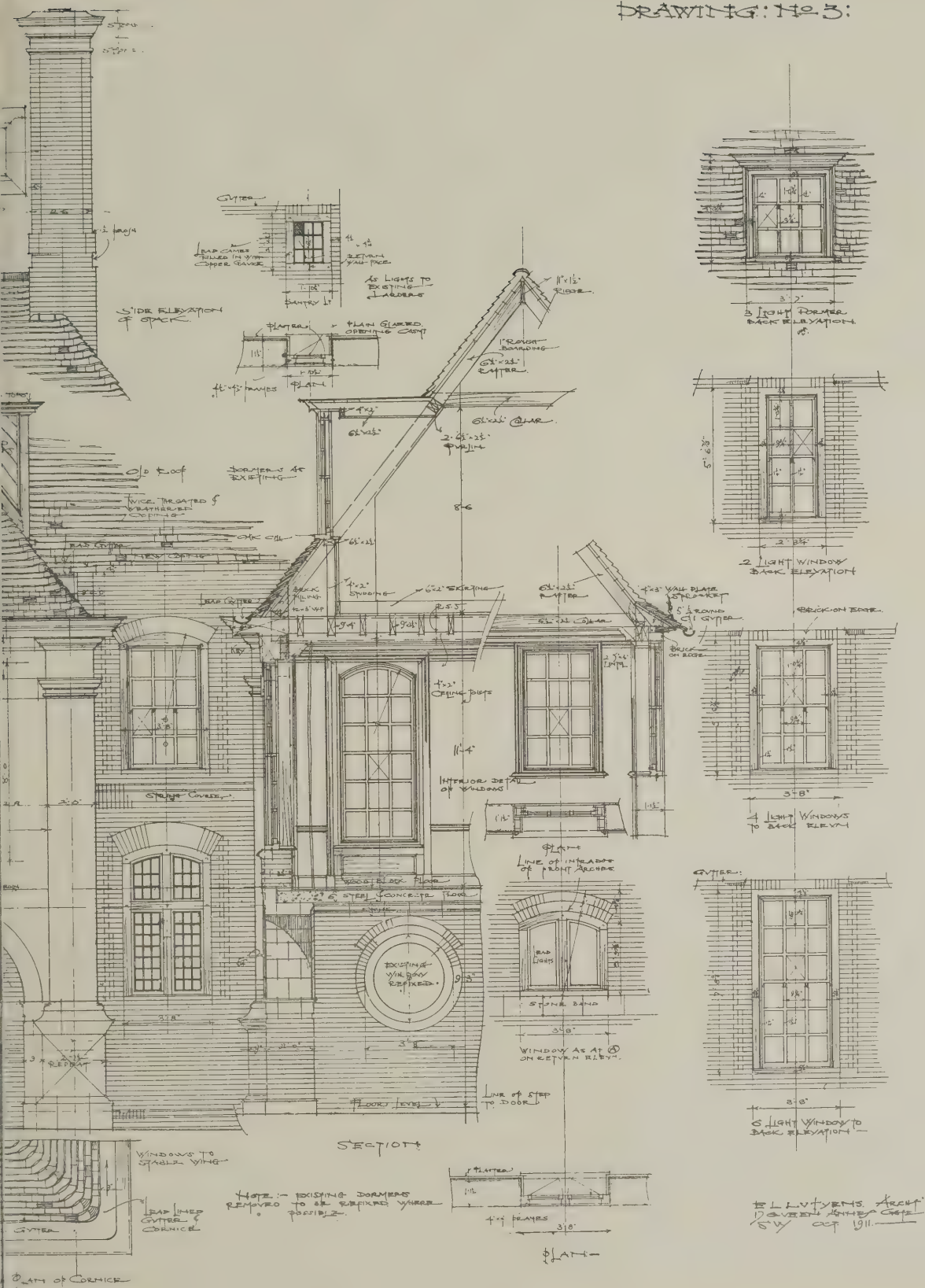
BY B. A. MILLER.



MODERN SMALL HOUSES—VII. GARDENER'S LODGE, OXFORD.
CLOUGH WILLIAMS-ELLIS, ARCHITECT.



DRAWING: No. 3:





South-West Front.



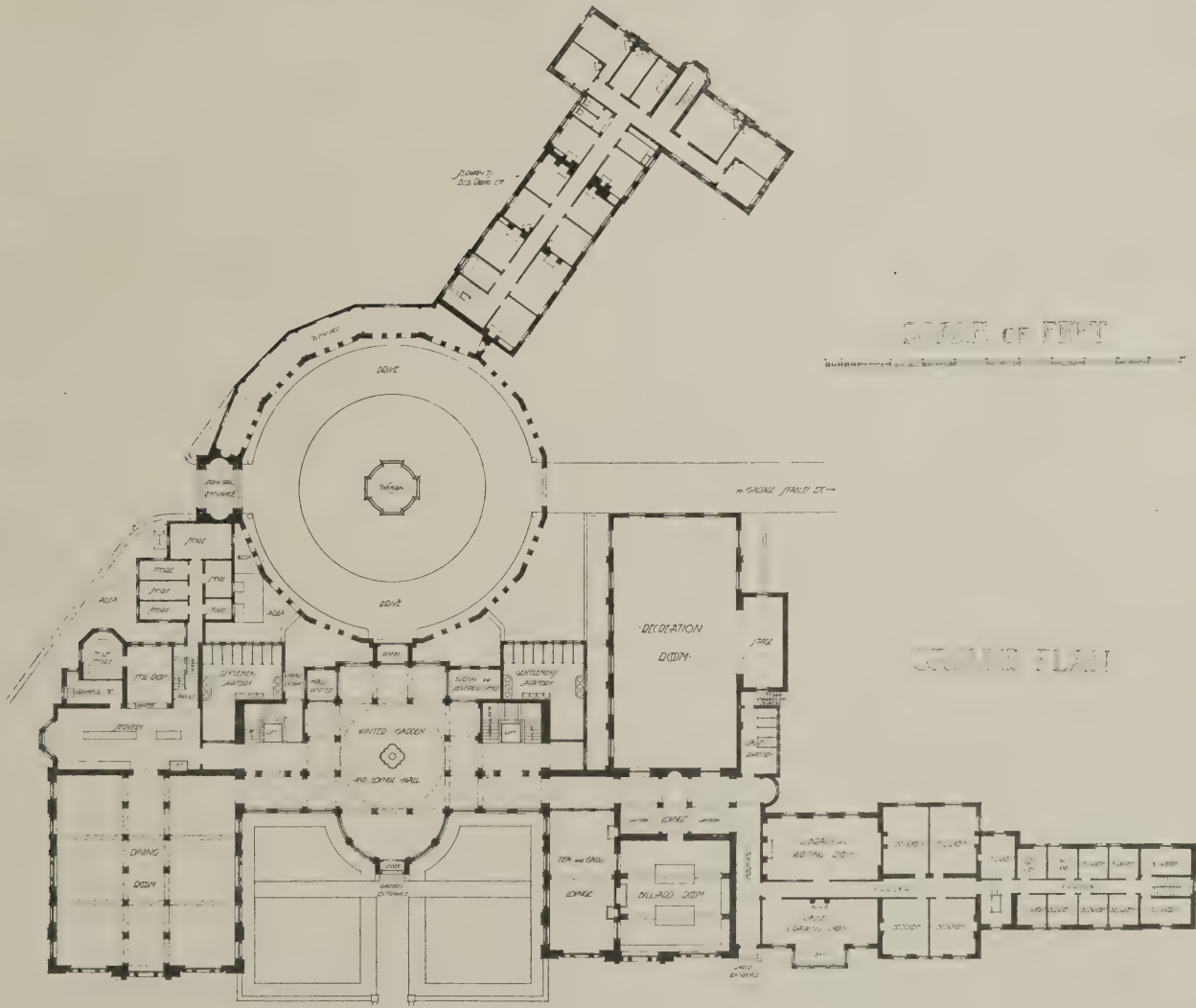
The Winter Garden.

HYDROPATHIC ESTABLISHMENT, BATH. SILCOCK AND REAY, ARCHITECTS.

This building is to be erected on a commanding site overlooking the city in the beautiful grounds of Vellore and Darlington Court—occupied, until recently, by Bath College; and the design has been prepared so as to utilize the existing buildings to the fullest extent. The alterations are being rapidly proceeded with, so as to open the first portion by Christmas. In the completed building there will be accommodation for 150 guests.



View of Colonnade and Entrance.



HYDROPATHIC ESTABLISHMENT, BATH. SILCOCK AND REAY, ARCHITECTS.

The new circular entrance court and colonnade form a connecting link between the three existing blocks of buildings. Immediately adjoining the entrance court is a large lounge hall overlooking the old terraced gardens with their lawns, grottos, and fountains, and close to the hall is the recreation room, which is to be fitted with a special dancing floor, stage, etc.

CORRESPONDENCE

*The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents.
Correspondents are asked to be brief and to write on one side only of the paper.*

The Repair of Old Buildings.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—My attention having been drawn to the correspondence in your issues of August 28th and September 18th last on the subject of the repair of old buildings, and in particular to the use of new stone and Portland cement, I should like to explain the position which this society takes with regard to the use of these materials.

First, let it be clearly understood that this society does not lay down any definite rule with regard to either material, but holds that each case should be judged according to its merits. If your correspondents were to study the work which has been done in consultation with this society they would find both new stone and Portland cement used under certain conditions.

I should like to express the general principles of the society on these two matters. First as to stone. In the repair of a stone building the society urges that new stones should not be inserted to take the place of those which, although decaying, are still structurally sound and do their work well. Only those stones which have perished badly should be repaired, and the remainder should be protected from further decay by some suitable surface treatment.

The experience the society has gained from those who have had the actual supervision of the repair of old work is that, practically, the best method to repair individual stones is with tile work bedded flat in mortar and cut to fit the irregularities of the stone, and being at the same time properly bonded to it. Circumstances vary and the treatment may also vary. In some cases the best method of repair is by using large quantities of tile work; in others it may be well to use none.

As to Portland cement, this society recommends the use of this in certain positions. It is of opinion that it is good sometimes to use a "shiver" of cement in conjunction with lime mortar. But it feels it to be a mistake to use it alone for ordinary pointing, and also that where it is used alone it should be seldom or never used in stronger proportions than one of cement to five of sand.

As to the use of grouting for repair of old walls which have become disintegrated, this society is of opinion that useful work can be done by this means, but feels that this way of repair is of little or no use unless it is carried out under the supervision of most experienced experts. Again, it must not be thought that a given method of repair is infallible in all cases.

It is interesting to notice that the work of repair to St. John's College, Oxford, is mentioned in your paper as a successful piece of repair work. In this case new stone and Portland cement were used, and the work was carried out in consultation with this society.

A. R. POWYS, Secretary,

Society for the Protection of Ancient Buildings.
London, W.C.

Mr. E. P. Wells and a Beam Test.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Referring to Mr. Wells's presidential address to the Concrete Institute, in which he quotes the instance of the internal lever arm of a beam being increased by the concrete hardening by age, would any of your readers (or Mr. Wells) explain how this took place? The internal lever arm of a section is the distance between the centre of the tensile reinforcement and the centre of gravity of the equivalent section of concrete (or concrete and steel) in compression. How can this dimension be increased by harder concrete?

I can understand the neutral axis shifting by the concrete in tension becoming hard enough to operate sensibly, but this would, if anything, reduce the lever arm. The only way to increase the lever arm is to increase the depth of the beam.

P.

London, W.C.

The Construction of Hard Tennis Courts.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In the very instructive article on this subject in your issue for November 20th, it is stated that "concrete and asphalt courts are to be recommended where much hard usage is expected"—at schools, for instance—and that "cinder courts are cheap and easy to make, but they injure the gut of rackets, and what with brushing and what with watering these courts require much attention. Concrete and asphalt courts escape this objection at the cost of being expensive to repair when they crack." My object in writing this letter is to say that the cracking of concrete can be obviated by having the divisional lines of the court run in bitumen, that is to say, leave a groove $\frac{1}{2}$ in. wide, and fill in with liquid bitumen at a temperature of about 400 degrees. This will allow for expansion and contraction of the concrete, and will have the further advantage of marking the lines of the court.

King's Lynn.

J. H. KERNER-GREENWOOD.

THE W. S. GILBERT MEMORIAL.

THE selection of a site for the proposed memorial to the late Sir W. S. Gilbert will ultimately rest with the Office of Works, and it will doubtless be in a public place in London. The executive of the memorial committee has at its head Sir Charles Mathews, whose popularity in legal and theatrical circles is a most valuable asset in a movement of this character.

"The executive committee recommended at its last meeting," said Sir Charles to a representative of the "Evening Standard," recently, "that the memorial should be an artistic monument illustrative of Sir W. S. Gilbert's work, including a bust, medallion, or other presentment. The idea is to have upon a pedestal illustrations from some of Sir William's best-known operas. This ought to appeal to a very wide section of the public, considering the measure of popularity which the Gilbert and Sullivan operas enjoyed."

"The subscriptions have not been limited to any particular sum, and the committee hope that they will come from all classes. The response so far has been most encouraging, and in a few weeks' time the committee expect to be in a position to select a sculptor."

The Embankment Gardens would seem to be a highly suitable place for the erection of the proposed memorial.

WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS.

AS the eighth example in this series we illustrate a detail of the south elevation of Temple Dinsley, Herts, designed by Mr. E. L. Lutyens, F.R.I.B.A. This wing forms an addition to an old house, which has been altered to its original plan. The facings are of dark brick, with light red brick and Portland stone dressings, specially made to harmonise with the old work. The roofs are covered with some fine old tiles. A typical example of Mr. Lutyens's domestic work, based on a phase of English eighteenth-century architecture, the house, together with its charming gardens, is thoroughly in keeping with the character of the surrounding country.

FOUNTAINS.

BY PROFESSOR S. D. ADSHEAD, F.R.I.B.A.

THE fountain designed as a water jet is a translucent and diaphanous object, and excepting in very wide open spaces, or where surrounded with foliage, is not well placed as the pivot or centre of a scheme. Where surrounded by architecture it is better designed primarily as an architectural feature adorned with sculpture from which may gush forth water in falls or fine jets. Unless so treated, the fountain in such a position should not take a central place; it should be a satellite rather than a sun. Something more solid and tangible than a mere jet of water is needed as the pivot of an architectural scheme. The importance of this is well illustrated in the Piazza in front of St. Peter at Rome, in the Place de la Concorde at Paris, and in Trafalgar Square, London.

In parks and gardens it is a beautiful arrangement to terminate or break the perspective of an avenue with a canal, a lake, or a pond; or, as in the case of the Parterre d'Eau at Versailles, to spread out expansive pools of water amidst ornamental treatments of flower-beds and paths. In the centres of such pools water-pipes may be introduced which will throw jets of spray to any attainable height; these are the true "jets d'eau," and in such cases anything in the nature of an architectural or solid base is best avoided: at most a few amorati, dolphins, or a single figure, being admissible. Indeed, it may be taken as an axiom that the more powerful the jet and the greater the expanse of the lake the less need is there for a substantial base. Some of the finest of "jets d'eau" have merely a nozzle or nozzles protruding above the surface of the water. But, apart from all questions of appearance, it must also be remembered that a powerful jet may be carried away in fine rain over a wide expanse. Thus, in quite a light breeze, the spray from the fountains in the Piazza of St. Peter at Rome is thrown across Bernini's colonnade, 150 ft. away.

Jets of water thrown to a great height are not suitably placed in the city; they should be reserved for the parks.

Amidst architecture, fountains are better designed with architectonic and sculptural bases, in the design of which there is endless scope for the imagination. Here our fancy may revel in a great diversity of shapes; from the simple bowl, out of which arises a figure directing a jet of water, to a great ensemble of seahorses, dolphins, watergods, mermaids, and nymphs.

John of Bologna was a great designer of fountains, his finest works, perhaps, being seen in the Boboli Gardens, at Florence, and at Castello. These are typical examples of treatments for immense bowls, resting upon sculptured bases, out of the centre of which arise sculptured stems. Many of our modern fountains, notably those in Trafalgar Square, London, and at the corner of Lime Street, Liverpool, are based upon these examples. Others, more architectural in form, are in reality a series of troughs arranged as receding steps, ornamented with sculpture, and crowned with the figure of a water god. An example of such a fountain is to be seen in the Villa Lante, and many of the most beautiful of the monumental fountains at Versailles are built up in this way—notably that in the centre of the Bassin de Latone and the Fontaine de la France Triomphante.

In regard to the actual design of the isolated fountain, too much emphasis cannot be laid on the importance of having a simple and easily-understood motif as a foundation upon which to overlay sculpture and ornamentation, and this applies not only to the modest wellhead and elevated bowl, but to the most grandiose and elaborate of schemes. If we analyse the finest fountains that the world has produced—and these are

perhaps to be seen at Versailles—we find that in all cases they are a more or less complex elaboration of a very simple idea—a pedestal and a figure, a bowl, a series of bowls, a trough, or a series of troughs, etc.; never a complication of different basic features.

No city in the world is so well furnished with fountains as Rome. Unfortunately, however, the great majority of them were designed at a late period and in a heavy barocco style. Many of them are extremely fanciful in their treatment, but the tendency to vulgarity, so characteristic of the period, robs them of all claim to those nicer qualities of refinement and charm which were so much better understood by their confrères who were engaged later in enriching the gardens of Versailles and the streets of Paris. The two fountains which stand in the Piazza of St. Peter at Rome are undoubtedly the best that were erected there during the Renaissance.

Finally, it would be an omission not to say a word about the edges of the basin with which the fountain is usually surrounded. Except in insignificant examples, where the basin is more in the nature of a trough or bowl than of a pond, the level of the water is better kept a little below the level of the ground. In parks and gardens a very beautiful treatment of the curb is to surround it on the outside with a narrow border of flowers and a strip of grass. (Extracts from an article in the "Town Planning Review.")

ADDITIONS TO THE WOODWORK
COLLECTION AT SOUTH KENSINGTON.

SOME important acquisitions have recently been made in the Department of Woodwork in the Victoria and Albert Museum. Among the new exhibits are (in Room 7) a pair of oak cupboard-doors from Northamptonshire, painted with scenes representing the orders of Angels, dating from about 1500. Of about the same date is a standing livery cupboard carved with open Gothic tracery, in Room 6. This was found recently in a farmhouse at Burwarton, Shropshire, and was presented by Mr. Robert Mond, F.S.A., through the National Art Collections Fund.

A fine piece of panelling, bearing the date 1546, has been purchased from a house known as Beckingham Hall, at Tolleshunt Major, Essex (Room 52). It is elaborately carved with decorations in the style of the Renaissance, among which are the Royal arms as borne by Henry VIII. and those of Stephen Beckingham.

The Museum collection of painted wooden roundels (also in Room 52), which were in use in Elizabethan and Jacobean times, has been enriched by a very uncommon set, consisting of twelve pieces enclosed in a turned case, each painted in silver and gold on black, with figures wearing costumes of the period of James I.

An important example of early English lacquer is shown in Room 55. This is a cabinet of the period of Charles II., mounted with brass and decorated with raised lacquer in gold and colours on a black ground. The carved stand is silvered; this is an unusual feature, gilt having been more usually employed for such a purpose. In the same room is a Queen Anne writing-cabinet, which is stated to have belonged to Dean Swift; it is veneered with walnut and decorated with fine marquetry-work, and is fitted with glazed doors above and with a secretaire below.

A gap in the historical sequence of English panelled interiors has been filled by the presentation from the National Art Collections Fund, assisted by a body of subscribers, of a panelled room of about 1730, removed from No. 26, Hatton Garden. The panelling is of pine, with elaborately carved mantelpiece, doorways, and recesses. (It is exhibited in Room 56.)

BYZANTINE MARBLE DECORATION.*

BY JOHN A. MARSHALL.

IN the fourth century A.D. decorative art in Rome had reached its lowest level. At the beginning of the century Maxentius, the rival of Constantine, began that great Basilica in the Forum that was probably finished by the Christian Emperor. According to Professor Lanciani, the eight columns of white marble that ostensibly supported the vault came neither from Greece nor Italy, but from far-off Proconnesus, an island in the Propontine Sea, near Constantinople. The columns were fluted in the classic manner, and one of them now stands as a lonely outcast in the Piazza de Sta. Maria Maggiore. The marble when fresh is bluish-white; it is coarsely crystalline and banded with a pleasing grey of various shades. I know of no other instance of its use in Rome, and it would be interesting to learn how it came to be used for the Basilica.

This is the marble said by Vitruvius, and Pliny after him, to have been used in the decoration of the Palace of Mausolos, more than six hundred years before the Basilica of Constantine was built. From the time of Constantine Proconnesian marble became as important to the builders of the Eastern Empire as the white marbles of Greece and Italy had been to the builders of the Western.

The first churches followed the simplest type of pagan basilica in preference to the grander type exemplified by the Basilica of Maxentius. The simpler type, with a colonnaded interior, just sufficient to support a wood roof, was easily and quickly erected, especially when the columns were taken, as they often were, from some dismantled building of pagan Rome. Of these early churches in Rome very little is left beyond the columns, and the only one I care to draw your attention to now is the fifth-century church of S. Sabina, where the original austerity remains undisturbed and most impressive. I have mentioned the antique fluted columns of Hymettian marble in the nave, but not the continuous stretch of *opus sectile marmoreum* in purple and green porphyry on a white marble ground over the arcades.

Marbles at Ravenna.

We must not linger in Rome, but hasten to Ravenna, where in the fifth and sixth centuries decadent Italian art was infused with "a ray of beauty from the East." Among the marbles to be seen in the Ravenna churches the white with grey veining from Proconnesus is most prominent, but another favourite for bands and panels was a strongly marked red and white foliated species, like that found in Laconia. In structure it closely resembles the Greek marble of Carystus, hence it is popularly known as red "cipollino." The sinuosities of its banded formation are remarkable, and when the slabs are "opened out" the patterns are very striking, the whites are candid, but the reds seem to be suffused with the bloom of newly-gathered plums. The marble was also used at the same period in Constantinople, and we shall meet with it as second-hand material at S. Mark's, Venice.

Apart from the Proconnesian columns of the nave arcades and fragments of ambos and parapets, very little of the

marble decoration is left in the basilicas of Ravenna, but, judging from a few slabs of Proconnesian plating that have escaped removal, I should say the aisles and apses generally had a dado of the material. From the Basilica of S. Apollinare in Classe, most of the marbles were carted away in the fifteenth century for that church at Rimini, encased by Alberti. Fortunately the fine "cipollino" monoliths of the nave could not be removed without bringing down the church; and it was worth walking six miles on a frosty Sunday morning to see them and the all-glowing mosaics of the apse.

The domed polygonal Church of S. Vitale, in the city, is, I regret to say, the abode of good and evil genii; the former, represented by pure Byzantine art, belong to the lower part, while the latter, in shameless nudity, hover in the dome. I will therefore ask you to rivet your attention on the lower part, where in the restoration of the plating the old simple design, I take it, has been followed. The walls of the ambulatory and the piers defining the angles of the octagon have a high "Proconnesian" dado, and on the sides of each pier are panels of red "cipollino," separated by bands of white, edged with notched fillets of a type peculiar to Ravenna. In this refined scheme we get a hint of what was then being done in the far-off capital of the East.

Close to the Cathedral of Ravenna is a modest-looking octagonal structure, apparently new—this is the famous Baptistry, erected, strange to say, in the first half of the fifth century. Entering directly from the cathedral precincts, the visitor is scarcely prepared for the sudden outburst of splendour that forms a canopy to the venerable-looking font in the middle of the floor space. Four sides of the lower story disappear in the concavity of small apses, devoid of their original decoration; but the flat, semi-circular spaces of the alternate sides are filled in with superb examples of *opus sectile marmoreum*, the main lines of which are rigidly opposed to the curve of the enclosing arches. The materials are chiefly purple and green porphyry, beautifully inlaid with white linear ornament that suggest embroidery.

Assuming the *opus sectile* was not designed for its present position, we need not hesitate to regard its introduction, in lieu of mosaic, as a clever and successful expedient.

Up to the present we have seen but a faint reflection of Byzantine art; for the art itself we shall have to fight our way into Eastern Europe, where it appeared at the beginning of the sixth century so completely developed that we might imagine it to be of spontaneous origin, did we not believe in the theory of artistic evolution.

Sta. Sophia.

From what is known of the marbles used by the Romans, and with the aid of that remarkable description of the Church of Sta. Sophia, Constantinople, written by a Byzantine poet in 563, there has been no great difficulty in identifying most of the marbles that still enrich, I hope, the crowning glory of Justinian's efforts.

To what extent the builders of that church availed themselves of second-hand materials we shall never know, but we may assume that the idea of bands and panels

for the plating of the nave was derived from Rome. Whether the superb monoliths of Thessalian green, 25 ft. 6 in. high, came from Ephesus, or those of Proconnesian white, in the galleries, came from Cyzicus, need not concern you; but if the porphyry columns of the exedras were placed on pedestals because they had been sent by a lady friend a little too short, it is worth remembering as a lesson in unaffected design. I will not attempt to describe in detail the decoration of a church I have not seen, but merely draw your attention to a few, as I imagine, of its salient features. The bands of the plating in the nave are generally lighter than the panels, but just above the skirting of the ground floor and that of the galleries is a well-defined band of Thessalian green. The use of alabaster, translucent and golden, for the lighter bands is remarkable; no doubt it gives a rich mellowness to the plating, and it may have softened the brilliance of the gold that is said to have been applied to the sculptured parts of white Proconnesian marble.

Although the possibility of a lavish application of gold to the sculptured parts cannot be overlooked, in view of certain literary evidence, it has not, so far as I know, been proved, and the traces of gold and blue on the minor features of this and other Byzantine churches cannot settle the question. A striking feature of the lower story is the zone of black and red panels, with carved framing, that repeats in a measure the richness of the arcades. The arches of the upper arcades are devoid of carving, but a frieze of inlaid marble on the piers spreads its flowing pattern in brown and white over the spandrels, while roundels of porphyry and alabaster enhance by contrast the delicacy of the inlay. Though entirely superficial, the casing of the arches rather suggests solid arcaded lintels.

The panels of the name plating are mostly Carystian green, and a black with white veins, that may be a streaky variety of *Marmor Celticum*. Here and there a slab of purple porphyry or of red marble enlivens the design, and a refined touch is given to the plating throughout by the notched fillets that edge the panels and the bands.

The plating of the main piers in the aisles is less formal; the panel system disappears, and between bands of Thessalian green and red "cipollino" slabs from Phrygia are alternated with others from Thessaly, only separated by notched fillets. The flat moulded slabs of the plinth and frieze clearly express their superficial nature.

The artistic purpose of the responds separating this dado from the nave plating is seen in those pilasters, more suggestive than real, that reflect the *motif* and the colour of the columns. The plating of the galleries is of the simplest type, like that of S. Vitale, Ravenna. The elaborate panels of *opus sectile marmoreum* on the walls of the "Bema" and about the royal doorway, are also reminiscent of those in the Cathedral Baptistry, Ravenna.

All other churches pale into insignificance when compared with that of Sta. Sophia, yet it is interesting to note how the decoration of the larger church served

* Portion of a paper read at a recent meeting of the Architectural Association.

as a type for others in Constantinople and Greece down to the eleventh century. In these there is the same flat treatment of bands and panels; but, generally, instead of a brilliant edging of notched fillets, we find plain beading, occasionally cut into "bead and reel," around the panels.

Returning to the western shores of the Adriatic in the seventh century, we shall find architecture not at all in a flourishing condition; and in the following century the proto-Byzantine style of Italy was altogether extinct. The Italian architects were thus left to their own resources, and the result was a mixture of Italian and Byzantine elements, architectural development chiefly depending on the former, decoration on the latter.

Excepting parapets, ciboria, capitals, and archiepiscopal thrones, there is but little marble decoration of this period to interest us; the evolution of a new style was in progress; the transformation of the Italo-Byzantine into the Lombardesque.

In renovating the ninth century basilicas the Lombardic architects retained the Italo-Byzantine marble enrichments and adapted them to the new conditions. Sculptured parapets, from screens and ambos, were set in the external brickwork as decorative panels; marble columns were multiplied for external arches and arcades, and triangular slabs of antique vari-coloured marbles were applied to brick friezes, as at the Cathedral, Murano.

The Italo-Byzantine work at Torcello, though inferior to the proto-Byzantine work at Ravenna, cannot be overlooked by the English student who has felt the inspiration of "The Stones of Venice."

At Torcello, as everywhere in Italy, the hand of time has been checked and its marks obliterated. The white marble columns of the cathedral, with their capitals of native workmanship, seem to have withstood the ages well, but, looking at the screen, the ambo, and the archiepiscopal throne, we are haunted by the belief that these rare relics of departed splendour have been taken down and re-erected more than once. The Phrygian column of the "iconostasis," however, still retains its matchless beauty.

S. Mark's, Venice: Internal Decoration.

Returning to Venice, preferably by gondola, we look on the latest example of Byzantine influence in Italy with renewed interest, for, unlike any of the other churches I have mentioned, the cathedral of S. Mark has its exterior as well as the interior cased with marble. This peculiarity is mainly due to the fact that the Greek architect who planned the building had no hand in its decoration. He certainly did not dream of casing the outside with marble, though no doubt he assumed that the interior would be so treated, probably in the manner of those churches in Greece and the Far East that exhibit fully matured schemes in strict conformity with the structural lines of the building. This unity of purpose was not, however, destined to be realised, and, as Ruskin has said, "the church of S. Mark became rather a shrine at which to dedicate the splendours of miscellaneous spoil than the organised expression of any fixed architectural law or religious emotion."

When the structure was finished in 1071 agents were sent everywhere for marbles for the paving, but thirteen years later this elaborate tessellation was still unfinished. The Venetian archives do not, I believe, throw much light on the progress of the interior wall plating; they

relate more to the mosaic and the decoration of the exterior.

The wall plating was probably delayed, and in the meantime the columns, the gallery parapets, and the screens, ambos, and ciboria from the earlier basilicas would be the most interesting features of the interior, excepting perhaps some of the mosaics.

The columns are mostly slender shafts of Proconnesian marble, sometimes suggesting in their veining the transverse markings on the stem of a silver birch tree; but in the shadow of the aisles are clustered some venerable and sturdy shafts of grey granite, probably bought from a Byzantine church in Sicily for the earliest basilica at Venice.

Although S. Mark's is a church of two storeys, the marble plating of the interior rises nowhere higher than the parapets of the galleries. The arrangement of the slabs is generally artless, without any definite scheme beyond that imposed by using second-hand material in the simplest possible way; and it could not be more opposed to the expression of organic construction. The slabs are merely fixed side by side, in tiers, like vertical strips of boarding, with the veining "opened out."

For the main piers and the spandrels of the arcades Carystian green is used; and for the walls the plating is, in some places, entirely of Carystian green, and in others entirely of Proconnesian white.

Looking beyond the columns of the nave, we see on the walls of the aisles the rich effect of studied design. Instead of monotonous ranges of narrow slabs, the long stretch of plating, up to the string at the level of the capitals, is arranged in seven upright divisions, defined by different marbles; the greens of Carystus and Thessaly, the white of Proconnesus, red "cipollino," and a red "lumachella." Above the string the white Proconnesian frieze is enriched with the well-known series of mosaic panels that suggest enamelled plaques of the twelfth century. These may have been inserted after the removal of the gallery floors, otherwise they could hardly have been seen. Where the ends of the floor beams once rested on the walls there is now an arcaded cornice of red Verona marble; this is also continued along the inner side of the gangways to receive the arcaded balustrades.

The Arcades.

Comparing the arcades of S. Mark's with those of Sta. Sophia, Constantinople, and the Siculo-Norman churches, the Venetian example seems to suggest a compromise in the manner of its decoration, for instead of the arches being entirely cased with marble or covered with gold, the conditions seemed to necessitate the use of both materials, the mosaic being confined to the underside of the arches by the marble architraves.

In the Church of S. Luke, Phocis, the plating of the arches is also so intimately associated with the mosaics that the two can scarcely be considered apart, but in this instance the decorators were faced with a more difficult problem.

Time will not permit us to linger over minor features of S. Mark's that add so much to its interest, but before leaving the interior the little chapel of S. Isidore, at the end of the north transept, has a special claim on our attention. Finished in 1355, it exhibits the characteristics of Venetian art at its best. Below the string at the springing of the barrel vault, gleaming with gold, the side walls are plated with

large upright slabs of Proconnesian marble, alternated with narrower strips of purple porphyry, and the green breccia of Thessaly. An unmistakable Venetian touch is seen in the little piscina, with its Arabic arch, and roundel chiselled into a Byzantine fancy. Contrasted with this simple and flat decoration is the vigorous expression of the Pisan school, at the east end of the chapel, where the sculptured tomb of the saint occupies a recess behind the altar.

Besides the typical antique marbles used at S. Mark's, I would draw your attention to others from the Venetian territory, which, no doubt, were specially quarried for the building. Various breccias, shell marbles, "broccatello," and a mottled green, like the serpentinous limestone of Prato, are used throughout the interior for the seating, and for borders to the general plating. These local marbles, though not unimportant in the decoration of S. Mark's, became more prominent during the progress of the Venetian style, and in Verona and the cities of Tuscany they were exclusively used for external decoration in a way quite original.

The "lumachellas" are, of course, not metamorphic or holocrystalline, but masses of comminuted shells enclosed in a calcareous cement that may be either pale, yellow, red, grey, or black.

The "broccatello" also contains organisms in the shape of ammonites and belemnites, sometimes clearly defined, though generally the mass is confused and mottled; the colour varies from yellow to red. These limestones were got chiefly from the hills around Verona. The quarries were worked by the ancient Romans, who in the time of Diocletian selected a flesh-coloured variety as a building material for the amphitheatre at Verona. Examples of the red "broccatello" of Verona are in the Victoria and Albert Museum, notably some well "heads" from Venice and a monument from Verona.

The most typical of "broccatello," however, is that found near Tortosa, on the east coast of Spain. Its bright yellow organisms and deep-red paste at once suggest the rich gold brocade after which it has been named. I do not know that this particular kind of "broccatello" was used at S. Mark's, though at a later period, during the Spanish rule, it appeared in Naples, where some fine examples are to be seen. In this country you will find large specimens in the Wallace Museum; and if you can shut your eyes to the *Baroque* surroundings there you may think of the Greek physician, Dioscorides, who mentioned the marble of Tortosa nearly two thousand years ago.

S. Mark's, Venice: External Decoration.

The façade of S. Mark's is bleached, and in many places the original tinting is obscured by corrosion and "the golden stain of time"; yet, when seen from the opposite end of the Piazza, the building presents a delicate suggestion of opalescence, heightened by contrast with the deep gloom of the porches. As you get nearer your attention is focussed on the four bronze horses that once stood in the *agora* at Chios, and you feel that the art of the Grecians is eternal.

You try to imagine the church first as it stood, for two centuries, without any decoration, and then when the lower story, in the thirteenth century, was marked with the spoils of conquest, while the upper parts remained venerable-looking and bare. You examine with interest the details familiarised by Ruskin half a century ago—the "lily" capitals, the "vine in service," the

storied archivolt, once seemingly wrought in gold, the clustered columns that served as ballast for the galleys of the fleet, and the strange assortment of sculptured slabs of various ages that decorate the plainer surfaces like pictures on a wall. Finally, when you look on that later fantasy of the upper story you realise that the exterior of S. Mark's was a reflection of the wealth and power of the Venetians, and that it stands alone, not only in the methods of its production, but in its final results.

Limiting our attention to the thirteenth-century renovation of the lower façade, as most relevant to our subject in point of date and purity of style, we note, firstly, that the main structural lines, due to the plans of the Greek architect, were followed, but the organic decoration, due to Lombardic influence, was entirely disregarded. Before the renovation the central porch rose unrestrained, as it does to-day, but, for the new scheme, it was widened and thus made more important. The impost slabs, at the springing of the arches, follow the original levels, but the novel scheme of the thirteenth-century decorators required something more than a thin shelf to separate the upper range of columns from the lower, so an extra shelf was raised on a blocking course or frieze, which, like the seating of the basement below, gives rigidity to what may be termed the columnar revetment. Only in the shadow of the central porch are the upper columns placed directly on the thin slabs, without the intervening frieze. The lavish application of columns to the piers may perhaps be regarded as an elaboration of Lombardic or Romanesque tradition, but the omission of arcading is, I think, without precedent, unless we admit the trabeated portals of Arles and S. Gilles.

Thirteenth-Century Extensions.

To the thirteenth-century renovators are due those elegant extensions of the main façade that give a sense of security at the angles of the building. Respecting the plating, we note, where it is not obscured by columns, how it has been made interesting beyond the intrinsic beauty of the marble by using it as a background or setting for sculpture and panels. Plain unbroken spaces are avoided by some conceit strictly opposed to the natural lines of the architecture; if the space is a spandrel, it has a panel or a niche in the middle of it; if a tympanum, the curve of the arch is opposed by straight lines; if rectangular, it is inlaid with discs, panels, and borders, like a pavement. Some of these compositions are artistically beautiful, others are ingeniously clever; though it is probable that many of the older sculptured slabs occupied corresponding positions on the brick fronts of the eleventh century, just as Lombardic panels are found decorating other churches of the Lagunar cities. The panels are invariably surrounded by borders of red or green marble, and the superficial character of the plating around them is candidly expressed by the use of narrow, upright slabs. It is also indicated on the arches, where the thin edges of the soffit slabs project to receive those on the front; this also applies to the sculptured archivolt. The influence of Byzantine refinement is also indicated by the absence of heavy mouldings, and the substitution of dentilled strings and archivolt and notched filets.

The main salient angles of the exterior are finished with a solid and fluted strip of red marble, flush with the plating; this feature, elaborated into a twisted shaft, was invariably adopted to emphasise the angles of the Gothic palaces of the city.

The columns present a miscellaneous

collection of marbles, but their disposition on the building shows that they were selected in some cases for their colour. Thus the central porch is made regal by shafts of purple porphyry, contrasted with others of white marble, and these support slender shafts of black and white breccia, now mellow with age. On each side of the central porch, facing the Piazza, are shafts of Thessalian green, and Greek or Proconnesian white, supporting others of white only. The disposition of the remaining columns is somewhat promiscuous, though it may be noted that those on the right of the main façade and on the return front facing the south are of richer marbles than those on the left and north; indeed, the south front, though restricted in length by a remnant of the old Ducal Palace, was always more important than that facing the north, and to understand it we must imagine it in the eleventh century, when the Zeno Chapel was a porch, opening on to a canal, that surrounded the walls and towers of the palace. The two isolated Byzantine pillars close by seem to reflect in their lapidary way the mooring-posts of the old canal.

The interior of S. Mark's was the last in Italy to be plated with marble in the simple Byzantine manner, but the innovation, from the Byzantine point of view, of casing the exterior became an established practice. This reversal of the old order of things was due to developments in architecture, and to the rise of the various schools of painting. In the course of time marble decoration assumed more and more the forms of solid construction, its legitimate application was lost sight of, excepting a very brief period at the end of the fifteenth century, when the Lombardi of the Renaissance attempted to revive it.

Norman Churches of Sicily.

It now only remains for us to glance at that peculiar phase of Byzantine influence on decoration to be met with in the churches of Sicily built during the Norman occupation.

The result of a fusion of Byzantine and Saracenic traditions, this decoration is unlike anything we have yet seen. Apart from the richly inlaid ambos, screens, and pavings of these churches, the marble plating is invariably limited to a high dado on the walls. Above the dado and the gilded capitals of the columns the walls and arches are entirely covered with mosaic.

The distinguishing feature of the plating is an Oriental or Saracenic application of geometrical patterns in glass and marble mosaic, a type of inlay repeated at Salerno, Ravello, and elsewhere, for pulpits, etc., and closely allied in style to the work of the "Cosmati" school of Rome.

The most beautiful example of Sicilian-Norman art remaining in Palermo is the Palatine Chapel, built by King Roger II. in 1143. The chapel is small, and so are its windows, but when the eye has mastered the prevailing gloom the effect is gorgeous, the mosaics scintillate, and the deep stalactite ceiling of the nave has a lurking splendour of purple, peacock-blue, and gold. Behind the columns of Egyptian granite and Carystian marble we seem to see on the aisle walls a hanging and valence with appliqué enrichments; this is the dado and frieze wrought in glass and marble mosaic, on a ground of white Proconnesian marble; and, as if to emphasise the general delicacy of the incrustation, large slabs and roundels of porphyry, bordered with mosaic inlay, are inserted at intervals below the frieze.

Of the same date, and similar in its decoration, is the church known as "La Martorana," in the same city.

After the mysterious beauty of these little churches the spacious and brilliantly lighted interior of the Cathedral of Monreale is quite surprising. Built at the end of the twelfth century by the last King of the Norman dynasty in Sicily, this church is more transalpine in its decoration than the earlier churches in Palermo; yet this is not so evident in the marble decoration as in the art of the mosaic-worker and the sculptor. Indeed, the high dado all round the church differs only from the earlier work in having no slabs or roundels of porphyry, the plating being entirely the greyish-white of Proconnesus arranged in narrow slabs, with intervening strips of mosaic edged with plain white beading. The deep frieze, inlaid with mosaic of "arabesque" and varied pattern, is also repeated. The vertical lines of this dado adapt themselves to the curve of the apse as naturally as a curtain hung on the wall. The mosaic is threaded with thin lines of cream-coloured stone that soften the harshness of the vitreous tesserae, and have the same artistic value as the strips of pearl used in the inlay of the Arab work in Cairo, about a century and a half later.

IN PARLIAMENT.

(By Our Press Gallery Representative.)

The General Post Office Front.

Mr. Wedgwood Benn, as representing the First Commissioner of Works, has stated that the front of the old General Post Office cannot unfortunately be used in the new building. The First Commissioner is very willing, however, to consider any suitable suggestion for its purchase and re-erection. Neither the Victoria and Albert Museum, the Royal Institute of British Architects, the King Edward Memorial Committee, nor the London County Council have been in a position to accept it, although it has been offered to them.

Safety Doors on Lifts.

Mr. Tyson Wilson asked the Home Secretary whether he had power to compel the use of safety-doors or gates in hoists or lifts used for the purpose of conveying people from floor to floor in factories, workshops, hotels, etc., and, if not, whether, in view of the number of accidents that occurred in connection with hoists and lifts, steps would be taken to secure such power.

Mr. Ellis Griffith, who replied, said the Factory Act required that all hoists in factories should be securely fenced, and this requirement was enforced by the factory inspectors. As regards hoists or lifts in buildings used for other than industrial purposes, the Home Secretary had given an answer to a similar question on February 29th last. The Home Office had no jurisdiction in regard to such buildings.

Regent's Park.

Mr. Wedgwood Benn informed Mr. Snowden that no proposal to continue Portland Place into Regent's Park had been submitted to the First Commissioner, and there was little probability of his agreeing to such a scheme should it be put forward.

London University Site.

Mr. Wedgwood Benn, replying to Mr. Snowden, said the Government was under no promise to find a new site for the

London University and it was not intended to use part of the Botanic Gardens for that purpose.

The New Delhi.

Mr. King asked whether the committee sent out to report on the building of the new Delhi was informed that a particular architect had been selected to submit designs for the new Government buildings, and if so whether the name of such architect could be stated.

Mr. H. Baker, replying for the India Office, said the answer was in the negative. Replying to another question he stated that no architect had yet been selected to design the Government House in the new Delhi.

Mr. King asked whether the India Office had consulted another architect besides Mr. Lutyens on the planning and designing of the public buildings, and if so whether the name of this architect could be given; whether his opinion agreed with that of Mr. Lutyens; and whether this architect or Mr. Lutyens had been, or would be, entrusted with the designing and carrying out of architectural work at Delhi.

Mr. Baker replied that the India Office had not consulted any architect about the planning and designing of the public buildings of the new Delhi, and no decision had been come to as to how or by whom they would be carried out.

Mr. King asked whether a London journal published last July what purported to be a summary of the preliminary report of the expert committee which went out to Delhi to report on the planning of the new part of that city; whether its publication was authorised by the India Office; and whether in future official reports, the full text of which was withheld, would be imparted to the public in this manner.

Mr. Baker said the newspaper article to which the honourable member presumably referred was not authorised by, nor were the materials supplied by, the India Office. The information which it contained with regard to alternative sites for the new Delhi and to the views of the Town Planning Committee seemed to have been generally known in India. The report published was not the official report.

BRITISH SCHOOL AT ROME.

The annual meeting of subscribers of the British School at Rome was held last week in the rooms of the Royal Asiatic Society, Albemarle Street. In submitting the report, which showed that the past season was in many ways the most successful of the school, the students having been more numerous than at any other time, the President of Magdalen College, Oxford, said the British School at Rome was now part of a larger whole—the Faculty of Archaeology, History, and Letters. He thought, however, that they should not allow themselves to be swamped. It was incumbent on them to make every effort to carry on their own work unimpaired and more vigorous than ever. He expressed the view that the students of the school would profit by working together side by side with students in other fields.

The work of transforming the elaborate pavilion in the Valle Giulia into the permanent home of the school, with library, studios, and hostels, was already in progress. Until the new building was available, the Faculty of Archaeology, History, and Letters would necessarily receive, as hitherto, the students of the whole school, and for the present, therefore, no change would be made in its premises or work in Rome.

ARCHITECTURAL STUDENTS' SECTION.

Under this heading a special contributor, eminent both as an architect and as an educationist, will furnish information on matters relating to architectural design and education. Advice will be willingly accorded to those who seek help in their studies; but questions relating to construction, or to matters which can be easily settled by reference to the ordinary text-books, cannot be considered.

Architectural Draughtsmen in Canada.

A. S. (Brighton) writes a letter regretting that he has not joined a school of architecture; but he intends joining one after Christmas and will take a two years' course before leaving England for Canada.

—A. S. is very wise, as he intends to emigrate, to get a wider outlook of a school education first. If he goes to Canada he will find good draughtsmanship at a premium and the school-trained assistants from America in receipt of very large salaries. But the demand far exceeds the supply, and a man who can take with him a portfolio of finely rendered drawings can at once secure a post from £6 10s. a week upwards, which, even allowing for the greater cost of living, is yet far ahead of the average assistant's pay in England. The kind of man required is one who can be given a sketch for a ten-storey office building and produce completely detailed elevations. As Canada follows the American system of dispensing with bills of quantities and giving the builders detailed sets of drawings to tender from, it will be understood that the capacity to draw and design detail down to that of fittings and furniture with the utmost minuteness is the essential thing expected from a first-class assistant. The assistant who details the façades and the interior decoration will not be worried with designing the steel construction. The large Canadian offices, like the large American ones—and some of them have now sixty to one hundred assistants—have each their staff of engineering draughtsmen to whom this work is entrusted. All the architectural draughtsman has to do is to work in touch with the engineering draughtsman, and to see that he provides space for the requisite stanchions and girders. Canada, like America, is a country of cities and not of villages. Winnipeg and big towns that are growing so rapidly in the centre and far west are modelled on New York rather than on Manchester or Birmingham. A comparatively small town will yet have buildings which to us would seem skyscrapers, so great is the belief in the future of the country. The result is that the English draughtsman who goes out with a knowledge only of the small domestic work of this country will find himself at a discount, except in a few special offices. The up-country farms and home-steads are generally crude structures of wood built by the farmers themselves or bought ready made. Of course, this is only a transitional stage, but it is the condition of things in the West, where architectural draughtsmen are most in demand. When a large country house or hotel is desired it follows the American and French ideas of such a building rather than the farmhouse and kitchen type so popular at the present moment in England.

A Course of Study.

H. S. (Nelson) writes: "Could you recommend a course of study for R.I.B.A. examinations to a student wishing to start preparation for Intermediate Examination who has evenings at disposal, but is not

within reach of a school of architecture?"

—H. S.'s question is one which a large number of students must be asking themselves. The best course, which is not always the possible one, is for such students to give up their employment for a couple of years and join a school of architecture. With the advance in the standard of the R.I.B.A. examinations which has lately taken place, and establishment of design in its proper status as the chief subject of such examinations, work in a school of architecture has become much more necessary than it was even for the man who merely seeks to pass examinations. For the man who wants a thorough modern training in scholarship and design it was always necessary. Of course, it is still possible to pass these examinations, especially the Intermediate, in which design is still an optional subject, by individual work, but it is becoming harder, even with the help of instruction through the post. This latter method can never really inspire a student with the enthusiasm which is the essential thing in school training. It can at best correct his mistakes, and that without any knowledge of his personality and its potentialities.

H. S., however, should not have much difficulty in the book-work subjects, such as historical architecture and simple construction, and these will see him through his Intermediate, if he can prepare a good set of testimonies of study. To these latter he should try and give some individual character. It is difficult to make much of the sheet of floors, but for the other joinery sheets of doors and windows he should certainly measure old examples. The ordinary plates in the construction text books give such doors and windows as no self-respecting architect would ever put into any building of his own. In Nelson and its neighbourhood there must be somewhere good examples of eighteenth century doors and sash windows. If H. S. uses these well he will find his testimonies of study will impress the examiners. The same remark applies to the sheet of a roof principal. This can be made interesting and of real use if the student draws in isometric projection not only the truss but the ordinary roof timbers, and includes, perhaps, a dormer window. I saw such a sheet when examining some testimonies a little while back. For the sheets giving architectural details the student must now send measured drawings. It is wise if possible to send drawings of a complete building and to include the surveys taken on the spot.

For the general history of architecture I can strongly recommend Mr. Statham's new "Critical History of Architecture" (10s. net, published by Batsford), which I have just read. It is by far the best of the short general histories, and well covers the ground for the Intermediate Examination. It is, too, a critical history and not merely a recital of facts. It is consequently interesting reading, and will stir the critical faculties of the student, and these in turn will interest the examiner, bored to death by reading a repetition of the same stale facts in each of his hundred papers.

ARCHITECTS' AND SURVEYORS'
APPROVED SOCIETY.

A special general meeting of the Architects' and Surveyors' Approved Society under the National Insurance Act was held on December 3rd at the premises of the Architectural Association, 18, Tufton Street, Westminster, Professor Reginald Blomfield, A.R.A., in the chair.

Mr. F. R. Yerbury (secretary) said that upon the National Insurance Act (of 1911) coming into force, the question of the position of those employed in architects' and surveyors' offices who came within its scope presented itself, and it was felt by certain members of the two professions concerned, after obtaining the best legal and expert advice, that they would be justified in advocating the formation of a special society for the employees of architects and surveyors for many reasons, the chief of these being that such a society would consist of a select membership, drawn from a professional class whose occupation was healthy, and whose income would in very many cases rise to an amount which would remove them from the scope of the Act. The contributions of those passing out of the society in this way would remain to the credit of the society, and, as a consequence, it should be able, in a few years, to offer larger benefits than those actually prescribed by the Act, and in this way the contributions forfeited by those who passed out of this society would be used for the benefit of fellow-members of their own profession. A provisional committee of representatives of the Royal Institute of British Architects, the Surveyors' Institution, the Architectural Association, and Society of Architects was formed, and it was decided to proceed with the formation of the proposed society. The society was formally approved by the Joint Commissioners for England, Scotland, and Wales on October 16th last, but previous to this provisional approval had been granted by the Commissioners for England. At the present time the membership of the society was 1,574 ordinary members, one voluntary member, and fifty-five honorary members. There were still a number of applications for membership to be dealt with, and, taking this into consideration, it might be safely reckoned that the total ordinary membership at the beginning of next quarter would be well above 1,600. A few applications for membership had been rejected for medical reasons, so that the present membership, as was anticipated, was composed entirely of select lives. Reverting to the original contention that the majority of members would in time pass beyond the income limit, it was interesting to note that already four members had withdrawn from the society for this reason, and the following statistics went still farther to support the same contention, that the majority of members would pass beyond the income limit at a comparatively early age: Number of members between sixteen and twenty-one, 358; number of members between twenty-one and thirty, 942; number of members over thirty, 274; total, 1,574. With regard to the finances of the society, it was difficult at the present juncture to give details, but the expenditure up to the present might be divided into three sections, viz.: (1) The preliminary expenses incurred in the formation of the society: These amounted to £199 2s. 1d., and were accounted for as follows: Printing, £129 1s. 1d.; clerical work, £15 15s.; legal expenditure, £52 10s.; advertising, £1 16s. These amounts were met by the four professional institutions interested,

who contributed the following sums: Royal Institute of British Architects, £80; Surveyors' Institution, £80; Architectural Association, £20; Society of Architects, £20; total, £200. Thus the preliminary expenditure might be ruled off as settled, and in this way the society commenced with a clean sheet. (2) Non-recurring expenses: Under this head were reckoned expenditure on office equipment, extra clerical assistance, printing, etc., £50. The treasurer would give further financial details, in which he would take into account the present liabilities of the society. (3) Recurring expenditure: Under this head were reckoned ordinary current administrative expenses, amounting to £31 5s. 8d. Up to the present, application had not been made to the Commissioners for payment on account of these expenses, but a friend of the society had very kindly made an advance free of interest, from which these had been met. It was the business of that meeting to confirm the election of the officers and committee appointed by the signatories of the application made to the Commissioners for approval of the society, in accordance with Rules 20 and 25.

The list of officers was announced as follows: President, Professor Reginald

Blomfield, A.R.A., F.R.I.B.A. Vice-presidents: Sir J. F. L. Rolleston, M.P., Mr. C. Bidwell, Mr. Howard Martin, Sir A. R. Stenning, Mr. H. T. Steward, Hon. E. G. Strutt, Mr. Leslie R. Vigers, Mr. I. Lish, Mr. E. J. Hamilton, Mr. Gerald C. Horsley, Mr. Percy B. Tubbs, Sir Ernest George, Mr. T. E. Colcutt, Sir Aston Webb, C.B., R.A. Trustees: Sir Aston Webb, C.B., R.A., Mr. Daniell Watney, Mr. W. Edgar Horne, M.P.

The Hon. E. G. Strutt moved a resolution confirming the appointment of officers and committee as follows:

Auditor, Mr. Turville Brown; treasurer, Mr. Maurice E. Webb; general committee, Mr. George Corderoy (chairman), Mr. Walter Cave, Mr. George Hubbard, Mr. H. D. Searles-Wood, Mr. G. Leonard Elkington, Mr. Maurice E. Webb, Mr. H. Austen Hall, Mr. Ian MacAlister, Mr. C. McArthur Butler, Mr. A. Goddard, Mr. E. H. Blake, Mr. B. Marr Johnson, Mr. J. H. Sabin, Mr. Ralph Ellis, Mr. Clifford T. Steward, Mr. A. G. Cross, Mr. E. C. P. Monson, Mr. R. G. Lovell, Mr. F. R. Priest, Mr. Gustavus Reeves, Mr. H. D. Whitham, Mr. W. I. Keir, Mr. H. J. Higgs, Mr. H. W. Virgo; solicitor, Mr. H.



CORNER OF DRAWING-ROOM, "DERRY'S WOOD," WONERSH.

JOHN F. BENTLEY, SON, AND MARSHALL, ARCHITECTS.

Kingsley Wood; and secretary, Mr. F. R. Yerbury.

Mr. McArthur Butler (secretary of the Society of Architects) seconded the resolution, which was carried.

Mr. George Corderoy acknowledged the resolution and made a general statement.

Mr. Maurice E. Webb proposed a vote of thanks to the societies which had financed the preliminary expenses, Mr. G. Reeves seconding the motion, which was carried.

Mr. Gerald C. Horsley then proposed and Mr. J. H. Sabin seconded a hearty vote of thanks to Professor Blomfield.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.

Mr. Raymond Unwin on Town Planning.

Lecturing before the Birmingham Architectural Association recently, Mr. Raymond Unwin, F.R.I.B.A., adduced a number of reasons why architects should take a special interest in town planning. In the first place it affected their buildings; in the second, it was really architectural work on a large scale; and in the third they, as a profession, stood specially for the addition of beauty to useful building. When it came to making a plan for the laying out of buildings, the matter got beyond what either the engineer or the surveyor was trained to do. The function of the surveyor was to bring before the town planner the whole of the facts of the site as it existed, the whole of its conditions, and the whole of the requirements as to the future; and it was his business when the architect had made plans which, architecturally, satisfied those requirements, to criticise them from the useful point of view. The engineer was the structural and executive man; he must tell them the limitations within which they must work. But when it came to making the actual plan the problem became an architectural one, and it was then that the architect should claim his fair share of the work.

Town planning consisted of two things. It was not only a plan, but a scheme. It fixed the width of streets and building lines, and the height of buildings in relation to streets. In some it was laid down that no houses should be of more than two storeys, and one partly, or wholly, in the roof. Here the interests of the architect were concerned. Then, again, some schemes gave to the local authorities power to approve of the laying out of groups of streets. Here, too, the interests of the architect were concerned. A limit to a certain number of houses in a row had been suggested in some schemes, without regard to whether there should be a wish to build a group of houses or not at the same time. The area of the site which might be covered by buildings was limited, and if this point were not watched it might easily happen, they could never have a street corner built up with any sense of closing in, and there would be great gaps even larger than those allowed under present by-laws.

All these were matters which could only be arranged by architects who, in their calling, were day by day brought into contact with them.

It was for architects to watch town-planning schemes carefully, said Mr. Unwin, and in order that they should have their proper voice in the matter he thought it was possible for a few of the architects in a district to form a committee to study the question and become experts who could advise the rest of their

body. In regard to the schemes affecting Birmingham, so far as he could make out there had been no architectural help or advice at all. They had only to look at some of the road junctions to see that no one had ever thought how the buildings were going to look where the roads came together. Birmingham's scheme did not go nearly so far in the matter of regulation of details of building as some others did. Still, there were points which might have been arranged by negotiation, and the Local Government Board were disappointed that the scheme had not received more architectural criticism and help. They would have preferred that the scheme should be criticised more and worked up by the Birmingham architects. He believed the Birmingham Town Planning Committee would have been very glad to appoint an architect, but there were difficulties in the way, and they did not do so. He did not think, however, there would have been any serious opposition if their association had brought the matter forward at the beginning as a most important and desirable thing to do.

R.I.B.A. ELECTIONS: NEW FELLOWS AND ASSOCIATES.

At the meeting of the R.I.B.A., held on December 2nd, the following elections were announced:

Fellows.

Lionel U. Grace (London).	C. M. Crickmer (Letchworth).
W. H. Greene (Newfoundland).	C. E. Elecock (Colwyn Bay).
A. H. Hind (Leicester).	William Haywood (Birmingham).
T. Honnor (Harrow).	O. C. Little (London).
Victor D. Horsburgh (Toronto).	A. C. Martin (London).
J. J. Joass (London).	Oswald P. Milne (London).
F. K. Kendall (Cape Town).	Sydney J. Tatchell (London).
Frank Lishman (London).	John Watson (Glasgow).
Alan E. Munby (London).	Frederick Willey (Durham).
J. C. Reid (Glasgow).	
C. H. Reilly (Liverpool).	

Associates.

A. G. W. Allen (Leeds).	F. W. Moore (Keighley).
N. A. Allen (Montreal).	R. G. Muir (Gerrards Cross, Bucks).
H. J. Axten (London).	F. E. Openshaw (Oxford).
F. J. Barry, jun. (London).	W. S. Owen (London).
T. P. Bausor (Wakefield).	John Page (Barnet, Herts).
T. P. Bennett (London).	G. E. Pearse (Johannesburg).
J. A. Bessant (London).	Travers Pickmere (London).
S. K. Bhedwar (Bombay).	T. C. Pope (London).
Alfred Booth (Barnsley).	W. S. Putwain (London).
H. J. Brownlee (London).	R. G. Roberts (Sheffield).
G. B. Bridgman (Khartoum, Sudan).	J. C. Robinson (London).
J. A. Cheston (Sutton, Surrey).	S. P. Schooling (London).
D. S. Cullen (London).	E. W. B. Scott (London).
Kenneth Dalgleish (Folkestone).	W. W. Scott-Moncrieff (London).
G. M. Dunn (London).	T. R. Somerford (London).
C. G. Evans (Neath).	W. R. Spurr (Wakefield).
Oliver Gaunt (Hitchin, Herts).	Ralph Stokoe (Newcastle-on-Tyne).
T. G. Gilmour (Glasgow).	E. J. Sutcliffe (Halifax).
Harold Goldstraw (Tunstall).	V. B. Talvalker (Baroda, India).
J. W. Green (Sheffield).	G. R. Topham (London).
J. C. Harvey (Northampton).	P. E. Webb (London).
P. E. Holland (London).	J. L. Warry (London).
E. H. Honeyburne (Liverpool).	W. G. Whincop (London).
R. J. Hughes (Llanfairfechan).	L. E. Williams (London).
J. W. Kay (Edinburgh).	J. H. Worthington (London).
J. R. Maughan (Newcastle-on-Tyne).	
D. J. Moir (Montreal, Canada).	

Hon. Corresponding Member.

S. L. Bernier (Membre de l'Institut, Président de la Société Centrale des Architectes Français, Professeur à l'Ecole Nationale des Beaux-Arts, Paris).

COMPETITIONS.

Harrogate School.

The Competitions Committee of the R.I.B.A. have been in correspondence with the promoters of the above competition. As a result the conditions have been amended and are now regarded as satisfactory.

Central School, Beckenham.

The designs submitted in this competition were exhibited at the Council Offices, Beckenham, on Wednesday, Thursday, and Friday of last week. Seventy-five designs were submitted. Subject to the approval of the District Council, Messrs. Buckland and Farmer—whose design was placed first by the assessor, Mr. A. W. S. Cross—have been appointed architects for the school.

A Hospital Award.

The decision to extend the Menston Isolation Hospital, near Leeds, has involved the hospital committee in a protest from the competing architects, says the "Hospital." It appears that originally four firms were invited to submit drawings for a scheme to be carried out at a cost of £3,000. Among the competitors was Mr. Alfred Marshall, of Otley, who submitted two designs: one showing how the extension could be carried out for the sum stipulated, and a further set showing how, in his opinion, it ought to be carried out. The latter scheme, on the whole, impressed the hospital committee so favourably that with a few alterations it was accepted, at an estimated cost of £3,750. This decision has led to a protest from the remaining three competing firms, by whom it is alleged that as the requirements have now been altered there should be a fresh competition.

LIST OF COMPETITIONS OPEN.

JANUARY 1, 1913.—EXTENSION OF MUNICIPAL OFFICES, DUBLIN.—The competition for the enlargement of Dublin Municipal Offices, in Castle Street, is restricted to practitioners in Ireland. The cost is estimated at £55,000, and the author of the selected design will supervise the work. Second premium, £150; third, £100. The latest date of application for conditions was December 2. Assessor, Mr. Albert H. Murray, A.R.H.A.

JANUARY 1, 1913.—APARTMENT HOUSES, BELFAST.—The Corporation of Belfast invite designs for 126 houses of two apartments each, and 126 houses of three apartments each, to be erected in Belfast. Premiums, £25, £15, and £10. Mr. Henry Seaver, B.E., Architect, Belfast, and Mr. H. A. Cutler, M.Inst.C.E., City Surveyor, will act as assessors. Conditions from the City Surveyor on payment of £1 is. (returnable).

FEBRUARY 3, 1913.—COUNCIL SCHOOL, HARROGATE.—The Borough of Harrogate Education Committee invite designs for an elementary school for 675 children. Particulars, C. E. Rivers, A.M.I.C.E., Borough Engineer, Harrogate.

MARCH 1, 1913.—MUNICIPAL BUILDINGS, RANGOON.—The Committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars (£1, returnable) from the London agents, Messrs. Ogilvy, Gillanders and Co., Sun Court, 67, Cornhill, E.C.

LAW CASE.

Water for Building Operations.

In the High Court of Justice, King's Bench Division (before Justices Channell and Avory), judgment was recently given in an appeal arising out of a claim brought by the Metropolitan Water Board at the County Court at Westminster, to recover 15s. for water used by the defendants, Messrs. Johnson and Co., in building operations at Hounslow Barracks. The Water Board claimed to recover under Section 17 of the Metropolitan Water Board (Charges) Act, 1907, the sum being calculated at the rate of 7s. per cent. of the probable cost of the building. The County Court judge gave judgment for the plaintiffs, upholding their contention that in the circumstances they were entitled to make this special charge under Section 17 and to recover it from the builders. In 1911 the defendants, under a contract with the War Office, erected a building at the barracks, it being a term of the contract that the water necessary for use in the building operations should be supplied by the War Office free of charge to the defendants. The water being used by the defendants from the supply at the barracks, and being measured by the meter in the ordinary course, was paid for by the War Office at the rate specified in the schedule. Mr. Clavell Salter, K.C., and Mr. Goodland, instructed by Mr. Walter Moon, appeared for the Metropolitan Water Board, and Mr. Danckwerts, K.C., and Mr. Micklethwait, instructed by Mr. E. H. Riches, for the respondents.

Mr. Justice Channell said that, in his opinion, the appeal ought to be allowed, but as Mr. Justice Avory agreed with the County Court judge the appeal would be dismissed. He thought that the defendants were not persons who required a supply of water within the meaning of the 17th Section of the Act in question, and unless they were, the action was clearly not maintainable. The words, in his opinion, meant persons who desired to become customers of the Board for their water.

It seemed to his lordship that as long as the Board were taking from the War Office payment for the water used by the builders they could not say that the builders, who did not, in fact, require to be supplied by the Board, were stopped from saying so, and could be treated as if they did require supply. He did not think that this case differed from that of a person supplied with water by meter who underlet part of the premises for which he had the supply, and arranged that his under tenant should use the water coming through his meter. He saw no ground for saying that the statute, by giving an alternative code of charging builders who did require their water, intended to give the Board a power to charge builders a higher rate than other persons. If the Board wanted to prevent these cases arising in the future he thought they should put into the schedule of their agreements for water supply "non-domestic otherwise than for building operations," or some words equivalent to those.

Mr. Justice Avory held that the appeal ought to be dismissed. It appeared to him that Section 17 of the Act must be read as ancillary or supplementary to Section 16, and that the effect and meaning of Section 17 was that a builder who had need of a supply of the Board's water for the purpose of his building operations must

make the request for such supply to the Board and pay the special charge, if the Board so determined, for it. He did not think that the builder could be held to say that he did not require the water because he had succeeded in obtaining it without making the proper request under Section 16.

The appeal was dismissed, with costs.

NEWS ITEMS.

English Panelling for South Africa.

We are informed that Mr. A. G. Lee, of John Street, Bedford Row, W.C., has secured the contract for the whole of the panelling and joinery required in the new Law Courts, South Africa.

The English Bridge, Shrewsbury.

The scheme for widening the English Bridge at Shrewsbury has been temporarily abandoned in consequence of the L.G.B. declining to sanction a longer period than thirty years for the repayment of principal and interest on the required loan.

New Pharmacology Laboratories at University College.

New pharmacology laboratories at University College, Gower Street, have just been completed from designs by Professor F. M. Simpson. They are the first of the kind to be built in London.

A Correction.

In a paragraph that appeared on page 608 of our issue for last week it was stated that the new building of the Bank of Adelaide in Leadenhall Street had been erected by Messrs. Howell J. Williams, Ltd. This is an error, which we much regret. The work was carried out, in remarkably short time, by Messrs. Trollope and Colls, Ltd.

New City Architect for Nottingham.

In place of Mr. F. B. Lewis, who recently resigned, Mr. Arthur Dale has been appointed City Architect to Nottingham at a salary of £450 per annum. Mr. Lewis will continue in the service of the corporation as Consulting City Architect, at a salary of £250 per annum.

The Regent Street Committee.

The London County Council proposes to ask the Treasury to allow one of its members to sit on the committee appointed to consider the design to be adopted for completing the rebuilding of the Quadrant, Regent Street. The members of the committee are the Earl of Plymouth, Sir Henry Tanner, Professor Reginald Blomfield, and Mr. John Murray.

Wooden Cottages.

The Billericay (Essex) Guardians decided last week to so alter their by-laws as to permit the erection of a wooden bungalow. The surveyor said the new building was a type of Australian bungalow, singularly commodious, and built on a series of piles instead of dug-out foundations. The cheaper cost of construction would enable the need for workmen's cottages to be met more easily.

Messrs. Bovis's Annual Dinner.

The first annual dinner of Messrs. Bovis, Ltd., building contractors, was held on Saturday, November 30th, at the Victoria Mansions Restaurant, Westminster. During the course of the evening a number of excellent speeches were made and a good musical entertainment was given. Although the firm is only three years old,

it has already established a very strong position, and there is every indication of still further improvement in the future.

Proposed New Art Gallery for Dublin.

A design has been prepared by Mr. E. L. Lutyens for a new Municipal Art Gallery in Dublin. The structure, designed in the architect's familiar style of classic, would be about 130 ft. by 125 ft., providing for two main galleries in the centre of the block, with the usual administration offices around. The cost of erection is estimated at £25,000. The building is at present wanting a site, the suggested one of St. Stephen's Green, behind the Ardilaun monument, not being available.

OBITUARY.

Mr. Hans F. Price.

The death occurred at Weston-super-Mare on November 26th of Mr. Hans F. Price, an architect of considerable local eminence.

Mr. J. T. Bottle.

The decease is announced at Yarmouth on November 30th of Mr. Jonathan Tebbs Bottle, who was seventy-nine years of age. Born at Keysoe, in Bedfordshire, in 1832, Mr. Bottle subsequently settled in Yarmouth, where he was a partner in the firm of Messrs. Bottle and Olley, who designed a great many churches, chapels, and schools in the borough and county. Mr. Bottle was also the architect for the Yarmouth Hospital.

COMING EVENTS.

Wednesday, December 11.

Manchester Society of Architects.—Paper by Mr. H. T. Buckland on "Pitfalls of Professional Practice."

Thursday, December 12.

Sheffield Society of Architects and Surveyors.—Mr. H. F. Traylen, A.R.I.B.A., on "Barnack Church, with Parallels from Neighbouring Churches."

Society of Architects.—Mr. E. W. Harvey Piper on "Salisbury Cathedral."

Royal Society of Arts.—Sir Bradford Leslie on "Delhi, the Metropolis of India," John Street, Adelphi, at 4.30 p.m.

Concrete Institute.—Mr. Robert Cathcart and Mr. Laurence Gadd, F.I.C., on "The Effect on Concrete of Acids, Oils, and Fats," at 7.30 p.m.

Architectural Association (Camera, Sketch, and Debate Club).—Mr. Charles Allom on "Furniture."

Leeds and Yorkshire Architectural Society.—Mr. G. H. Foggitt and Mr. Piet de Jong on "A Tour in Italy."

Paint and Varnish Society.—Mr. A. P. Laurie on "Pigments and Mediums Used by the Earlier Painters," St. Bride's Institute, Bride Lane, Fleet Street, E.C., at 8 p.m.

Friday, December 13.

Birmingham Architectural Association.—Mr. Edwin Gunn, A.R.I.B.A., on "Halls and Manor Houses in Stone, Brick, and Timber."

Monday, December 16.

Royal Institute of British Architects.—Mr. Horace Porter on "The Walls of Visby, Gotland," at 8 p.m.

Wednesday, December 18.

Royal Society of Arts.—Mr. Joseph Pennell on "The Pictorial Possibilities of Work," John Street, Adelphi, at 8 p.m.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, December 11th, 1912.



ELEVATION, BY GEYMÜLLER, FROM B



MANTE'S PLAN OF ST. PETER'S, ROME.

THE
ARCHITECTS' & BUILDERS'
JOURNAL.

Wednesday, December 18th, 1912.

Volume XXXVI. No. 935.

No. 12.

Alira veduta in prospettiva dello stesso Tripode



(From Piranesi.)



The new chancel is an addition to a building of the 1830 period. The old pulpit has been retained for the present.

NEW CHANCEL, ST. AUGUSTINE'S CHURCH, SHAW STREET, LIVERPOOL.

EDMUND KIRBY, F.R.I.B.A., AND SONS, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

DECEMBER 18th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 935.

Building Construction in Technical Schools.

IT is estimated that about 50,000 persons are attending classes in building construction and the allied trades at technical schools in this country. Of this enormous army only a fractional percentage are persons likely to become architects or even architects' assistants. The large majority are directly connected with the building trades and become, in time, builders, foremen, clerks of works, or keep to their particular sub-division of the trade, as joiners, bricklayers, or masons. Of these by far the greater part, however, belong to the former class, who act in some managerial capacity, and as such become persons with very considerable influence on the buildings of the country. When we remember that of the total building work executed to-day perhaps not more than 5 per cent. falls under the direct control of architects we see that the education of these 50,000 persons is of predominant importance.

The vast system of technical schools, like the network of schools of art, which has spread over the country during the last fifty years is controlled by the Board of Education through a system of money grants. The policy, therefore, is in the hands of the Board and their inspectors. These latter inspect and report upon a variety of classes, in which those connected with the building trade are only a portion of the whole. It is true the Board of Education has recently appointed one or two inspectors, who in a general way deal with building construction classes throughout the country, and this may be the beginning of a better state of affairs. But, taking things as they are at the moment, we may say that the Board's inspectors are in the main men who have had a mathematical or scientific education at one of the older Universities, or have been through some engineering course. Among people so selected it is only by accident that one may be found with any knowledge of or feeling for the æsthetic side of building construction, and, as far as we know, the accident has not yet happened.

These inspectors regulate a system of teaching divided into four grades, in the last of which is included, with nothing to lead up to it, a certain amount of architectural design. This stage, however, is probably only taken by persons who are ambitious to become architects or architectural draughtsmen, and therefore for the moment may be disregarded. The education of the builders and their foremen is mainly in the earlier grades, and in these design as an end in itself very rightly plays no part. The windows and doors put before the student should be simple and effective as windows and doors. The vast accumulation of historical associations and ideas implied in the arrangement of the panels of a door cannot be explained on any constructional hypothesis. The students in these classes must take them for granted. The exact shade of meaning that a simple moulding has gathered in its long career from Greece in the fifth century B.C. to England of to-day is difficult enough for any one to appreciate. For the plain building construction

student there are only two safe courses open—either to do without the moulding altogether or to accept it on authority.

Now it is obvious that in the simplest cottage building architectural form as apart from constructional form cannot be entirely excluded. It, therefore, has been accepted on the authority of either the teacher or the text-book. We have seen the class of persons from whom the super-teachers—the inspectors—are drawn. We may safely say of the teachers themselves that they are not generally drawn from the ranks of the practising architects or persons who are greatly interested in the architectural expression of building construction. A large proportion of the teachers in these building construction classes are unfortunately persons who have qualified themselves in these very classes, so that, as in the Art Schools of the country, the same vicious circle is perpetuated.

If one turns from one source of authority, the teachers, to the other source of authority, the text-books, the state of affairs is even worse. One may safely assert that at the present moment there does not exist a manual of building construction in this country from which a judicious architect could take a simple unit like a door or a window and incorporate it as it stands into a building. Yet this is exactly what is required by the building student, who we may be sure, if he gets the opportunity, is going to build on his own account. He wants something to copy and something he can copy literally. Unlike the architectural student, he cannot make allowances for the Gothic coping given in the text-book on the top of the Classical cornice. He cannot use the structure and alter the form. He simply takes both as he sees them, and if we look at the million little houses of the suburbs we can see unlimited reproductions of the bay windows and front doors of the modern text-book.

Now, the modern building construction text-book is not, as a rule, written by an architect, nor are the examples chosen drawn by one. We have had, indeed, the first of three volumes, under the editorship of Professor Beresford Pite, of what promises to be just such a book. But the volumes are too expensive and the work too discursive to form the standard text-book for the Board of Education classes in building construction. It will no doubt be an admirable work for all architectural students, who should be able to understand the evolution of architectural form. But the building construction student cannot do this, and though he appears to love the actual geometrical drawing of intricate form, such as Gothic tracery, which, curiously enough, seems to find a place in his course, he has to accept undiluted by any historical knowledge the form which is put before him. He crowns his brickwork with highly articulate Classical cornices, to be executed, it goes without saying, in terra-cotta, though he has never drawn the Orders. Window-sills, copings to garden walls, parapets, all are moulded, and very curiously. These mouldings having for him the mystical

quality always possessed by an unknown or misunderstood symbol, are copied with religious fervour into the first 5s. cottage he erects.

What is wanted, then, and wanted very badly, is a series of text-books on building construction in which all the examples are measured and drawn from acknowledged work. The "Practical Exemplar" does this from a rather different point of view, for larger buildings, but no one yet has published a set of standard cottage doors, of standard cottage windows, of standard cottage fire-places, and the rest, all suited, as the phrase goes, to modern requirements, which in these matters fortunately are not so very different from the requirements of the eighteenth century. If the Board of Education would publish, and insist on its use, a modern edition of Batty Langley's "Builders' Jewel" they might draw their inspectors and teachers from the church, the theatre, or any other irrelevant source and the result on the vast mass of building to-day would be infinitely preferable to the Board's present work, to which, indeed, may be traced the larger part of our humiliation.

C. H. R.

A Substitute for the Apprenticeship System.

IN all matters, now, the importance of effecting improvements through the medium of the youth of the country, rather than attempting to reform those whose ways are established, is being increasingly recognised: and in the building trade this has a very direct application. It has long been seen that the decay of the apprenticeship system left the trade in a far worse position than it was in before, the obvious reason being that those who came to fill the ranks of the workers were not men skilled like those who had preceded them. This fact has been especially noticeable in the metropolis, where the skilled branches of the building trade are recruited very largely from the provinces. It is well, therefore, that a committee of the London County Council has gone fully into the matter, after consultation with the master-builders' institutes. The committee have just issued a long report, the substance of which may be briefly summarised. First, they do not approve the scheme of the Institute of Builders and the London Master-Builders' Association, embodying a system of premium apprenticeship, though they agree as to the desirability of evolving a scheme for the training of boys which makes proper provision for theoretical instruction at technical schools on two or more afternoons every week. To the London Association of Master Decorators the committee reply that the Council is in a position to train immediately twenty boys a year at the Brixton School of Building, that it expects to be able very shortly to train thirty others every year from schools in the north and west of London, and that arrangements are being made to form a consultative committee for the painting and decorating trades with a view to increasing the utility of the technical classes provided. Extra scholarships are to be established for these purposes.

For our own part we cannot help but share the regret which many feel, that the decay of the apprenticeship system has been a tremendous loss to the building trade. Times have so changed, however, that, in the present competitive age, the old system was bound to be dropped. But its merits have not been preserved, and, as a consequence, the standard of skilled work has fallen.

Middle-class Hospitals.

A VERY interesting scheme is embodied in the Empire Hospital now being erected in Vincent Square, Westminster, from designs by Mr. E. Hazell, F.R.I.B.A. The middle classes are accustomed to be called the backbone of the country, and they certainly have to bear the brunt of most of what is done

for the "working classes," while enjoying few of the privileges of the "upper classes." One respect in which they occupy an unsatisfactory position is that concerning the public hospitals. Members of the middle-classes when stricken with illness or accident are frequently unable to receive the best treatment in their own homes, and are not entitled to go into the ordinary hospitals free of charge. It is to meet this condition of affairs, therefore, that the Empire Hospital has been designed. It appears to be a business proposition, as the directors speak of assisting necessitous patients, and paying their hospital fees, with sums which may be set aside "out of the profits." But we assume the hospital will be managed on co-operative lines more or less, and so made a sort of communal possession. Accommodation is to be provided for forty patients, in separate rooms.

The Creator of Suburbs.

OUR contemporary the "Sanitary Record," we observe, has been protesting against the speculative builder being called a "much-abused craftsman" and the "creator of suburbs"; in which protest we heartily concur. There has been a solicitude for the speculative builder which we regard as altogether misplaced. His has been an affair of money-making pure and simple, and the results are to be seen in every town. It is true that the suburbs have been built up through his self-centred energies, but we trust, with our contemporary, that history will not repeat itself. "The successful speculative builder of the past may be regarded as an unlimited liability company of many parts, including landowner, financier, builders' merchant, estate agent, surveyor, investor and lawyer. Can one wonder at the result and the necessary economy practised to make both ends meet? Look at the long rows of buildings of bad type with their cheap designs repeated without end, and the projected back additions and the disposition of the rooms deriving their light and ventilation from wells and areas and back gardens, better described as back "yards." . . . What a heritage of misspent time, money, and labour!"

With the advent of the Town Planning Act, we can look forward with a better hope. The land around towns is henceforth not to be regarded as a private preserve which the owner may do as he likes with, but an area whose possession is conditional to the public welfare.

The Kensington Fire.

THE reports submitted to the London County Council by its Building Acts and Fire Brigades Committee with respect to the fatal fire at the premises of Messrs. John Barker and Co., Limited, in Kensington High Street, make very unsatisfactory reading. The fire occurred on November 12 and resulted in the loss of five lives; yet, having had ample time for deliberation on so terrible a catastrophe, the two committees have nothing more useful to say than that one of them—the Building Acts Committee—had in April last suggested to the firm in question the provision of a smoke-resisting screen, and that "if our suggestions had been carried out, we are of opinion that the screen at the head of the staircase would have kept the smoke from entering the bedroom passage for a sufficient time to enable the staff to escape." The Fire Brigades Committee report makes no suggestion whatever, but dwells mainly on the heroism of the firemen in effecting or attempting rescues. This is well enough in its way; but the frequency of fatal fires, with their appalling demands on heroism, is a matter which cries aloud for strict and competent investigation. Matters of far less vital public importance have been the subject of Royal Commissions, and we are convinced that this agency for the collection of data has become imperatively necessary.

ST. PAUL'S AND THE PROJECTED TRAM SUBWAY.

THE stability of St. Paul's Cathedral is again endangered; this time by the proposal of the London County Council to construct a tram subway within 65 ft. of the east end of the building. The bottom of the subway would be about 6 ft. above the footings at their deepest point. St. Paul's Cathedral, as Mr. Mervyn Macartney, surveyor to the fabric, has pointed out, stands on a thin bed of marl, beneath which is a depth of over 40 ft. of loose sand and gravel, held together by the presence of water. The experts all agree that if this is tapped in any way subsidence is bound to follow; with what peril to the Cathedral it is impossible to predict.

Tunnels of any kind, says Mr. Macartney, would tend inevitably to disturb the water lodged in the subsoil and cause it to drain off. It is the fear of this, as much as of the intermittent vibration of subterranean traffic, which has created anxiety for the stability of St. Paul's. Mr. Macartney states further that, as the Cathedral stands, with its vast untied spaces, its enormous weight brought to earth by a few piers, with exact equilibrium, it is safe only so long as the subsoil remains undisturbed. If the tram subway is allowed to be constructed, nothing short of underpinning the whole area of the Cathedral and taking the foundations down to the clay some 50 ft. below the present footings would, in the opinion of Mr. Macartney, be sufficient to safeguard the building.

The fears at the present time with respect to the draining of the subsoil are abundantly supported by past investigations. The selfsame danger was pointed out in a report issued jointly by Cockerell, then surveyor to the Cathedral, George Rennie, and Robert Smirke. Longman, the author of "The Three Cathedrals of St. Paul's," uttered a similar warning in 1874. Penrose, in 1890, when the safety of the structure was threatened by the promotion of the Central London Railway Bill, proved, in a report which he prepared, that it would be fatal to make excavations near the building. The proposal to construct a tube railway in Ludgate Hill and Carter Lane was another danger, only averted by strong public protest.

No more striking evidence of the folly of underground excavations in close proximity to a heavy building can be afforded than the case of Holy Trinity Church, Kingsway. After the construction of the

tram subway along that thoroughfare fractures appeared of so serious a character that the building was condemned as unsafe and pulled down. The comparison becomes all the more significant when account is taken of the immense weight of the superstructure of St. Paul's Cathedral. The great compressive stress which the fabric (at the east end in particular) has to sustain may be judged by the fact that when, some few years ago, the pilasters in the choir were being veneered with marble, the stone, although of the best quality, splintered and flew in all directions when cut. The same thing occurred during the recessing of the panels in the spandrels of the quarter domes, although the cutting was only two and a half inches deep. In one instance a large piece of stone flew out in the absence of the workmen. With such alarming forces at work, any interference with the subsoil is obviously a hazardous and extremely unwise undertaking.

The purpose of the contemplated subway, i.e., the linking up of the northern and southern tramways, might easily be achieved, as Mr. Macartney has already suggested, by the purchase of part of Blackfriars railway bridge (two out of the twelve tracks) for the use of the tramways. The lines might be taken northward over the river through Ludgate Hill and Holborn Viaduct Stations to Snow Hill Station, where the tramway might emerge from its subway into Farringdon Street and, again running underground to Aldersgate Station, rise from that point to meet the terminus in Aldersgate Street.

The railway company, however, have vigorously opposed the suggested appropriation of their metals; and it would seem that the only way to carry out a scheme of that kind would be to extend the railway bridge on one side to a sufficient width to carry the two lines of tramways.

With respect to the proposed subway, Canon Masterman has already explained that an agreement for its abandonment was made with the Corporation so long ago as April, 1911. The Dean and Chapter withdrew their opposition to the Bridges Bill of the Corporation solely because the provision was made in the agreement that they were not to be regarded as consenting to a subway in any form, for which powers might afterwards be required. The agreement, as will

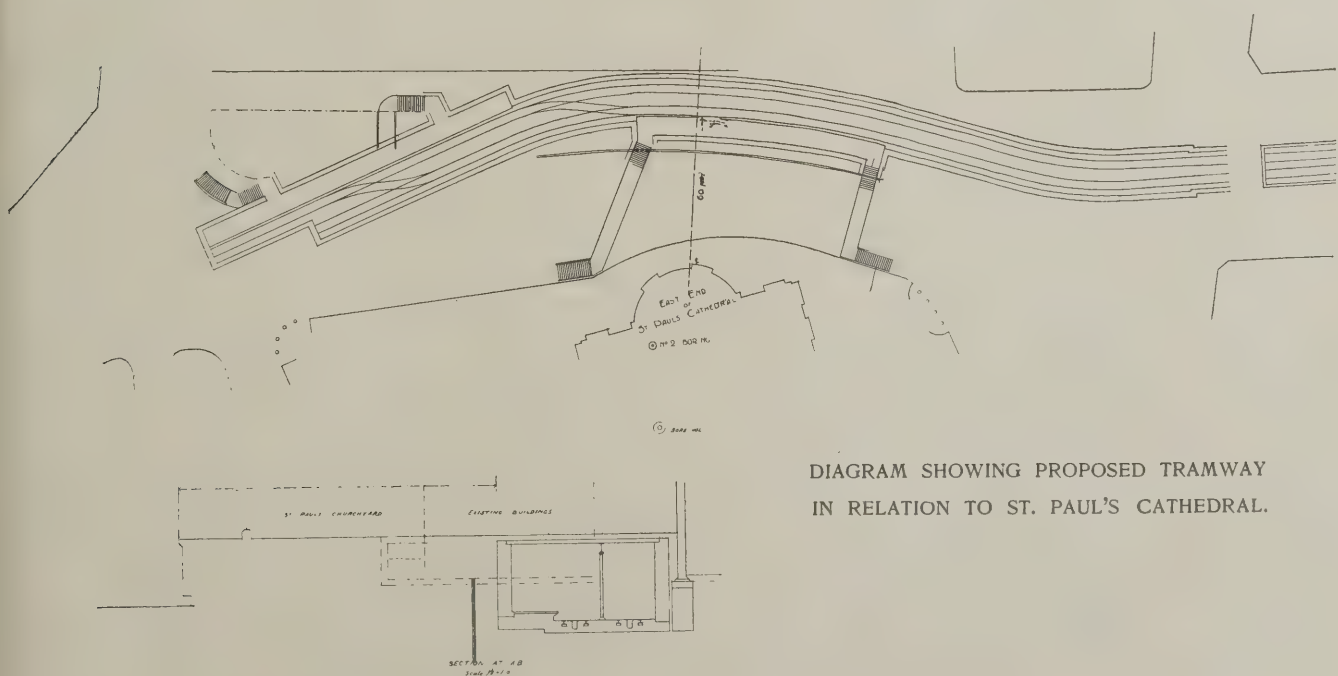


DIAGRAM SHOWING PROPOSED TRAMWAY IN RELATION TO ST. PAUL'S CATHEDRAL.

be seen, covered not only the subway under discussion, but any other proposal of the kind that might subsequently be made. These negotiations were confined to the Corporation, and the Dean and Chapter had no knowledge that the County Council, or any other body, would ever proceed with the tramway. It is stated, furthermore, that after considerable delay the Dean and Chapter were informed on December 3rd, as a result of inquiries made by them, that no information could be given as to the proposals of the London County Council. On the same day, however, the Dean and Chapter obtained a description of the proposed subway from the House of Commons, and this was the first official intimation they received of what was contemplated with respect to St. Paul's.

The present agitation has arisen out of the approval last week by the London County Council of the Tramways and Improvements Bill, which it is proposed to bring before Parliament during next session. The Bill provides, among other things, for the construction of the tramways across the new St. Paul's Bridge and of the subway passing under Cannon Street and St. Paul's Churchyard to the north-western end of Cheapside. Although the Bill has been approved by the Council, it will still be possible to withdraw clauses from it, if such a course is considered advisable; so the danger to St. Paul's, although imminent, is not inevitable, and there is hope of its being altogether averted when the Bill is brought before Parliament.

We reproduce a plan showing the position of the proposed subway in relation to the Cathedral, and also a chart of one of the three experimental borings which were made by the committee appointed to inquire into the condition of St. Paul's in 1907. This committee stated in their report that they had gathered that the settlements of the fabric which occurred in the building of the church had continued in some degree to the present day. After the weight of the main building

had compressed the subsoil to its limit, they thought it might be assumed that there was a period of quiescence; but that during and subsequent to the erection of the dome, movements began to show themselves as a result of the additional weight. The committee stated, further, that they had had the foundations uncovered at different points, and found that the footings were formed of three twelve-inch courses of stone slabs with a projection of 2 ft., the level of the pot-earth being about 4 ft. 6 in. below the crypt floor.

The concluding remarks of this report are specially significant in view of the present subway proposal: "After mature deliberation," the committee stated, "and a thorough examination of the Cathedral and its foundations, we are of opinion that, in spite of these settlements, there is no immediate necessity for any extensive remedial measures to be undertaken; but this conclusion is based on the assumption that the present conditions of the subsoil and the present water level will be maintained. . . . We also recommend that the condition of the subsoil and the state of the water level be carefully watched and periodically recorded, as all official investigations point to the same conclusion—that in them lie the possibilities of future dangers. In this connection attention should be given to all building operations in the neighbourhood, or mischief of a more serious nature may arise."

The London County Council still maintain that their proposed subway will not in any way endanger the safety of the Cathedral; but, in view of the anxiety expressed by the Cathedral authorities, it is proposed to arrange a conference between representatives of the Dean and Chapter and of the Parliamentary and Highways Committees, at which the question can be fully discussed.

DOMESTIC INTERIOR DETAILS.

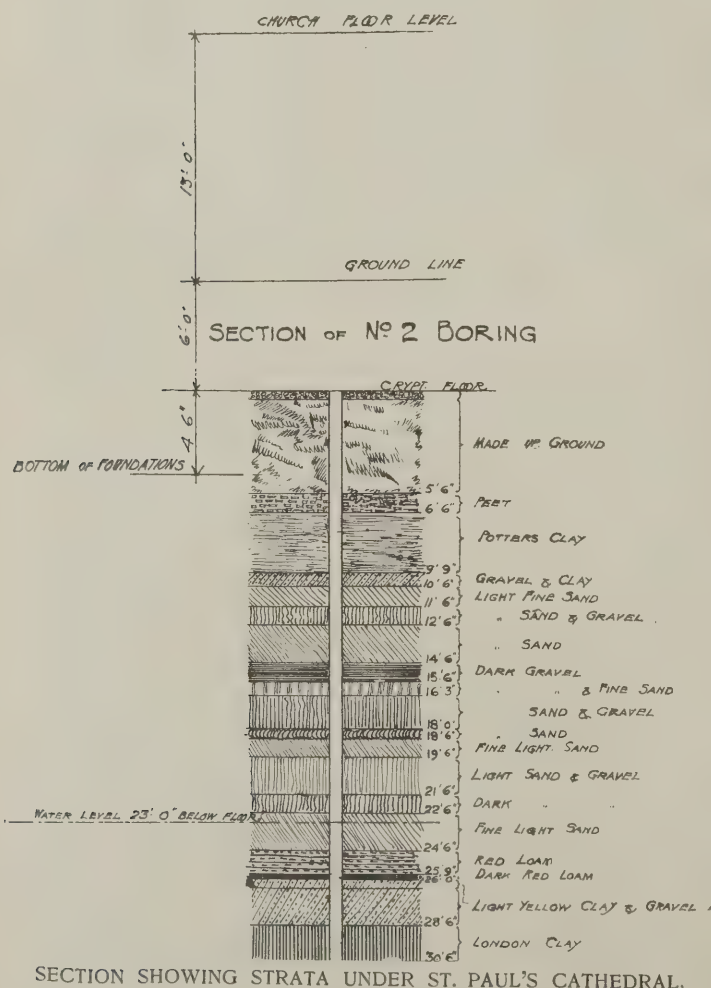
A Fine Series of Forty Plates.

TAKEN on the whole, it may be assumed that architects are more concerned with domestic work than with any other class of building. Yet, curious to say, it is very rarely that detail drawings of such work are published. For that reason, therefore, the Special Issue which we shall publish at the end of this year is sure to be very much sought after, as its chief feature will be a series of forty plates of details of domestic work by well-known architects, including Mr. Ernest Newton, Mr. E. L. Lutyens, Mr. E. Guy Dawber, Mr. Mervyn Macartney, Mr. E. J. May, Mr. E. Turner Powell, Professor C. H. Reilly, Mr. Oswald P. Milne, Mr. Ronald P. Jones, Mr. F. S. Chesterton, Messrs. Horace Field and Simmons, Messrs. Richardson and Gill, Messrs. Geoffrey Lucas and Lodge, Mr. T. Millwood Wilson, Mr. J. M. W. Halley, Mr. Evelyn Hellicar, Messrs. Woodhouse, Corbett, and Dean, Mr. W. H. Bidlake, Mr. Percy Newton, and Mr. C. H. B. Quennell.

These forty plates have all been specially prepared from the architects' working drawings, and they give the practical details of both the design and construction; they include, also, small photographic illustrations of the executed work, thus making the representation complete. Chimney-pieces, staircases, panelling, doors, and similar interior details are shown in this way, and, in addition, there will be a number of most useful plates of dressers, pantries, serveries, storeroom fittings, and other practical details not to be found in any other publication.

In order to avoid disappointment, readers are urged to place their orders for this Special Issue *at once*, either with their newsagent or direct with the Publisher, at Caxton House, Westminster.

The issue will be an additional one, dated December 31st, and will be published at 1s. net (postage $\frac{1}{2}$ d. extra).



THE PRACTICE OF THE CRAFTS IN MODERN BUILDING.

A COMBINED meeting with the Art Workers' Guild was held last week at the Architectural Association, Tufton Street, Westminster, when the four papers which follow were delivered. Introducing the discussion, Mr. Gerald C. Horsley said that the Art Workers' Guild, which was formed about twenty-five years ago, and of which he was one of the founders, represented thirty or more crafts. It had been a most successful society and of the greatest benefit to its members, to whom it offered the opportunity of becoming acquainted with the methods and principles of crafts other than their own. He had had the privilege of being one of the Guild's hon. secretaries for a period of eighteen years—years upon which he looked back with feelings of the deepest pleasure.

BY F. C. EDEN.

A few years ago we used to be told that the practice of the crafts was the whole duty of architects. Since then our mentors have moved with the times, and now engineering, "the noblest architectural result of the Renaissance," is said to be the one thing needful. The earlier theory was that the workman—craftsman they liked to call him—was to be fancy free in manipulating his material, and by a flourish of his tools, as by a sort of peaceful picketing, to warn off the architect from ignorant interference with his self-expression.

Architects have usually been willing to learn—at any rate, up to a certain age—and though they could not agree to leave carpenter and mason to work their own sweet will entirely untrammelled, they came to see that the touch of nature and nature's materials is worth a deal of office drudgery, so that nowadays it might be hard to find one to show the fine impartiality attributed to Sir Gilbert Scott, and mark his design for a reredos as being "for oak or alabaster." And now that we have gone so far with the critics they pounce upon us, dragging with them a new bogie dressed up as an engineer, and affirm that he is the only real artist, in whose mathematical formulæ the secret of true architecture lies hid.

Give the carpenter a saw and a log, and you need only wait to get a fine hammer-beam roof, just as the co-operation of mallet, marble, and Michelangelo once produced a David. That was the old Arts and Crafts theory. The new one is this: provide an engineer with a book of tables and formulæ, and a thousand tons of steel cut to stock sizes, and the splendid practicality of the result is the only form of architectural beauty possible in the twentieth century.

I must own to a scruple about subscribing to either of these theories—of which I hope I have sketched the outline without caricature—since they seem to me to have originated in those uncomfortable shades where cranks and faddists do peep and mutter, and to take but small account, the one of things as they are and the other of things as they should be. In any case, the result is to queer the pitch for the poor architect. He may still, perhaps, have his use if he keep abreast of the latest inventions whereby civilised man hopes to become daily a more and more comfortable animal, and if he be clever and unscrupulous enough to build a box for £150 to keep the uncivilised in. Whatever theories may be afloat, it seems to me absurd to suppose that fine architecture can exist without right practice of the crafts, even the humblest of them. For example, the reason why the earlier works of that great master who has been lately taken from us do not give us the pleasure which we feel they should is surely this: that at the time they were built the right sort of brick and tile was not to be got. This trade (of the brick and tile maker) is perhaps the one in which the most real improvement has taken place, chiefly by the sub-

stitution of hand work for machinery; while carpentry continues to deteriorate owing to the increasing use of machinery in the trade; and where to have an oak roof-truss, for example, properly made and framed in London without machinery and without iron I know not. But I wish to confine the few remarks which I have to make to one trade, the condition of which can hardly be said to be satisfactory, that of the house-painter. The most we dare expect from him is that he lay a sufficient number of coats of good lead paint and match a sample tint with fair accuracy; that he work with neatness and leave no smears on the window panes. Once I had occasion to import an Italian house-painter from Florence, a man who worked at what was, I suppose, the usual rate for him, viz., 10d. an hour. One of the things he was set to do was to decorate in the Poccetti manner a large coved cornice broken into by lunettes. When he started upon the first section—there were about seventy spaces to be filled—he asked if I would like them varied "per evitare la monotonia," as he said, to avoid monotony. And then he set to work and made a different but balanced design for every compartment. His method was to rough out his design on the plaster with charcoal—a matter of about five minutes (the lunettes, if I remember right, measured about two feet across)—and then paint it in without more ado.

I will not say that the designs were always in the purest taste (the Italian, like other workmen, has become vulgarised by that general trend which we call progress), but he still has a sort of mediæval facility, coupled with an innate sense of fitness which the British house-painter has long ago lost.

He, as I said, can match a tint, but even there his method is all wrong. He will mix you a mess of paint, certainly, but why is the result so unpleasant when it is upon the wall? Simply because the only way to get a beautiful effect of colour is by a glaze, which allows the under colour to strike through. If you come across a piece of eighteenth-century panelling which has escaped repainting—say, where a cupboard has been fixed across a recess—the chances are that you will find an example of this method.

The French way is technically better than ours; the difference consists in the way the first coat is laid over the priming. For this the paint is made into a thickish paste with oil and driers, without turpentine, and this is spread not with a brush but with a broad spatula and well pressed home. It takes about a fortnight to dry, and is followed by three more coats laid in the usual way, the only difference being that the brushes used have much longer and softer hair than ours. Stippling is not used, and the finished surface is very silky and pleasant.

For decorative objects, such as frames, reredoses, images, and screens for churches, and so forth, the following is the best process I know: Lay a gesso ground over the whole surface, whether wood or stone, and upon this two coats of colour ground in spirit and mixed with spirit varnish. Then a coat of spirit varnish only; and, finally, and this is most important, the glazing or toning coat, of colour, wax, and turpentine. This method has the advantage that the toning can be promptly removed in whole or part when any modification or correction is required by a rag dipped in turps, and also that it produces with rubbing that semi-polished surface so sympathetic to sight and touch which wax alone can give.

Tempera colour can be used over the gesso if preferred instead of the spirit medium, and can be burnished like gilding where a glossy surface is required. What I have described must not be confused with a method of dirtying carved mouldings that has come into vogue lately; anyone who has amused himself

with the humours of the crowd in the Automobile Club will have seen an example of what I mean. The carving is first painted white or some light colour, and then amber or other darkening matter is rubbed into the interstices, and cleaned off the salient parts. In the London atmosphere this may be called an intelligent anticipation of events, but it is easily overdone, and, like all excess, degenerates into vulgarity.

Gilding is a thing of which you can scarcely have too much if it is done in the right way or too little if it is done in the wrong. Oil gilding—our usual method—is at best a makeshift, but even here the English gilder goes astray. He is prone to lay his size much too thick and to lay the gold leaf while it is still too soft and tacky. A gesso ground should always be used, not paint, and still less bare wood, the effect of the grain grinning through being very crude and amateurish. The result of wrong methods is that the gold quickly loses its brilliancy and turns to a shabby, dirty yellow. Where durability and richness of effect are aimed at burnished gilding is the only way. The gesso ground is covered with a thin layer of bole; this is wetted, the gold laid on it and burnished when dry. If the result is too bright and metallic for the purpose in hand the glitter can always be subdued by use of the wax toning recommended above.

Reverting for one moment to the relationship of the crafts to architecture, I have read in a recent textbook, "We are always agonising about design, but design, as Rodin has said, is as nothing compared to workmanship." One is not surprised at Rodin disparaging design, but only that an architect should quote his words with approval. I do not think the whole misconception of the position could be better expressed; it is our old friend the fallacy of false apposition. The crafts are the ingredients of which architecture is compounded. Design is to a building what the cook is to a dinner. If the fish be stale it doesn't much matter how nicely it is served, just as the choicest ingredients will be spoilt by unskilful cooking. Each is as necessary as the other to the success of the result, and each is helpless without the co-operation of the other.

BY F. W. TROUP.

I take it that the subject under discussion is the artistic crafts as distinguished from what are generally known as the trades connected with building. Every trade, however, is a craft, no matter how crudely commercial it appears at times to be. Indeed, one of the best examples of a modern craft is to be found in the practice of ferro-concrete. Although this seems to require the most abstruse scientific calculation of its strains and stresses, and is usually regarded as an extreme example of the useful inroads of the engineer on the province of the architect, it is, none the less, absolutely dependent upon the most careful craftsmanship for its execution. Ferro-concrete appears to me to be the modern analogue of a typical mediæval craft. So much is it a true craft that many engineers fight shy of it and declare that "they know where they are with steel pure and simple, but this mixture of steel and concrete is a hybrid of uncertain strength, and who can tell how long it will last"? Its devotees have to admit that it is a young craft, and there may still be about it some mysteries not fully gauged; but we must remember that even the arch in its early stages must have given masons a good deal of trouble before they understood all its possibilities when properly harnessed, and its tricks if used without full knowledge and proper control.

Before leaving this group of ancient crafts, which are now usually designated trades, I should like to enter a protest against the assumption that there is no longer in these trades any true craftsmanship. I think on the contrary that there is an immense deal of traditional craftsmanship in all the ordinary building trades, bricklaying, masonry, carpentry, smithing, plastering,

and so forth. The real trouble, as it appears to those who are most keenly alive to the apparent freedom, the easy unfettered symmetry in mediæval work, is that the modern workman attempts to hide all the best of his real craftsmanship beneath a skin of geometric precision, quite unnecessary and usually undesirable. Many architects, recognising this, have attempted to overcome it by using rough bricks, wide joints in masonry, and by other means in other materials have tried to get some semblance of the "fling" and "go" that seemed to come unsought in the work of the mediæval craftsman. I fear, however, we must acknowledge that this is only a makeshift. Emanating from the architect, whatever its merits may be, it is more of an artificiality than it ought to be, or would be if it came direct from the craftsman himself. I do not go so far as to condemn these devices of the earnest and conscientious architect. I cannot help admiring the results when ably directed and well executed. But I do venture to point out that they are not only easily imitated but easily exaggerated by those who do not always think for themselves and are inclined to overdo "the very latest thing out." Moreover, it is not a solution of the craft problem, although it may possibly point to, and perhaps help in, arriving at some cure more radical and permanent.

Whilst it is a little difficult to define in general terms the artistic crafts, it will be pretty generally accepted that carving, modelled plaster, decorative painting, and stained glass all come under that head. Most of these crafts are indeed usually practised by men with a special training, but the materials are the same for the crafts as for the trades—the carver decorates the joiner or carpenter's work, the modeller the plasterer's work, stained glass is only glorified glazing, and so forth. So that we must recognise at once that the work done in what is known as the artistic crafts is no more than the ornamental part of the commonplace building trades.

It requires no very recondite reasoning to arrive at this somewhat obvious conclusion, but it appears as if it were forgotten by the craftsmen themselves. They too often dissociate themselves from what I have been calling "the trade" of their craft. They learn to carve and forget to learn joinery; they learn to model and know little or nothing of plain plasterwork. If the craftsman worked more with the artisans of the corresponding trade, regarded himself as a superior plasterer, bricklayer, or smith and not merely the man to whom was apportioned the duty or privilege of doing the ornamental scraps and finishings, it would go some way towards overcoming the difficulties and dangers into which architects fall, and to which I referred above, when they try to direct in detail the manner in which materials shall be finished in the buildings they have to superintend. The stone carver would be a mason rather than a sculptor. He would take cognisance of the masonwork further than merely to come on the scene after the building was finished to carve and finish bosses and blocks marked on the architect's drawings as "left rough for carver." The modeller would have something to say, and knowledge from which to say it, with regard to the work of the plasterers generally. He would not, as now, merely deliver so many dozen beautiful casts whose exquisite modelling only makes the plain walls look silly by comparison. And, where the case required it, the trained tradesman, or, if you like, "artistic craftsman," would merely direct the general finish of the work without introducing any decoration or ornament whatever. The unattainable ideal is, of course, that he should be the foreman of that trade. His guidance of the workmen under him might and should then be a real training of the workmen. Coming from a man versed in all the methods and traditions of the craft, his orders and directions would be different from, and more effective than, those of even the most able architect.

BY CHRISTOPHER WHALL.

(The following paper was also read by Mr. Troup in the absence of the author.)

The subject is in two parts—with a trenchant division. "The Practice of the Crafts" is one and "Modern Building" is another. Permit me to start with the challenging paradox that there is no practice of the crafts in modern building.

I will define what I mean by the practice of a craft. To practise a craft you must first learn it—and to learn it to any purpose you must learn it as a child—when the mind is a *tabula rasa* and the spirit docile and obedient.

I taught my own craft for nine years in a school (besides training my own servants), and I never in one single instance could do anything of value with those who had passed beyond childhood and already accepted the formulæ and routine of modern production.

To learn a craft, the learner should begin as a small boy—an apprentice: and his school should be the workshop. One instantly thinks of a child with hair cropped by a barber's basin, a little dagger and wallet, and doublet and hose—for apprenticeship went out with the unfortunate advent of trousers. And what did the apprentice do?—he washed the brushes, ground the colour, sorted and waxed up the glass on the easel—and so on, and in intervals was taught the elements of his craft. And so he by degrees learnt it—learnt all of it—with the prospect of being a journeyman and some day a master, and so he became a journeyman and in time a master.

Well, you will ask, is there no such training now? In a sense there is, but in essence there is not; except in the workshops of those idealists who have set themselves to revive the crafts, as they have already revived that almost forgotten name.

In the ordinary shop where art wares are produced there are indeed "boys," who do all the kind of small services of which I have spoken; but when it comes to learning their craft, they only learn one particular operation of it. In stained glass, for instance (which is the craft I know best), they only learn the painting—or they only learn the cutting, or the designing, or the cartooning—and they do not become what they really should become; everything is arranged so that they shall not become Masters.

When you as architects go about to furnish and to decorate in detail your buildings, what do you do? You go to some big emporium where such wares are sold.

What then has been the personal training of those who in these days sway the destinies of the crafts of modern buildings? Why, gentlemen, to bring the thing home, much the same training as your own: Public school, college, office, and a book-and-sketch-book study of past styles, with a tour to look at old examples; notes how to imitate (without touching the tools or materials) work of the past which derives all that you admire from the intimate knowledge and diligent personal use of tools and materials.

I think the matter is very simple; to learn the elements of any craft is the key to the right way of tackling all crafts, and the intelligent way of dealing with them and directing them.

It is, I hold, far less important for those who are already craftsmen to learn architecture in a stonemason's yard than it is for would-be architects to do so. A man already a craftsman in one material has the key to craftsmanship in general, and sees the whole situation from a right point of view. He may soak in as much theory and learning and history and knowledge of the past as he can possibly absorb. I do not under-rate this side of training; we are the heirs of all the ages, and it would be a flippant and conceited upstart who because he had learnt to use his own ten fingers should think he had nothing to do with that

noble storehouse of the great past ages. You do well with your schools and your colleges, your offices and your sketch books; but if a man who has seen the building arts from both sides may offer a piece of advice, I would say to architects, and especially to learners of architecture, "Get a workshop knowledge of something."

You can do it now for about half-a-crown a month in the splendidly equipped and splendidly taught technical schools which abound in all parts of London.

BY W. CURTIS GREEN, F.R.I.B.A.

Those who inspired the formation of the Art Workers' Guild (to which I am proud to belong) have done architecture a good turn; they linked together architecture and the crafts, and have built up a body of craftsmen unsurpassed in their way. As a result of this reunion, English churches and houses are the standard of excellence throughout the world. We know that the practice of the crafts has not touched our cities or reached the sources of production; it has not done so yet, and, when we look back at the last fifty years or examine the present, is it not too much to expect that it should in so short a time have reached so far?

We have explored the arts and crafts of the East and of the West, of antiquity and of the Middle Age. Not content with the fulness this knowledge of history brings, we become enslaved first by one period of artistic activity and then by another, looking, some of us, for salvation in the resurrection of the dead rather than in the quickening of our own spirit. At one time it is the convention of Greece, the clearly defined articulate art; at another it is the orderly and majestic attributes of Imperial Rome; again it is the romance and daring of the Byzantine school; then our hope lies in the Middle Age, first the Gothic and then the Italian, and later the French development.

Each fresh enthusiasm has had its distinguished exponents, and has achieved wonderfully fine work in building and the crafts. These individual achievements satisfy all the definitions of great art but one. Collectively they are evidence that the modern is no whit behind his forebears in architectural genius and in individual craftsmanship. In other words the modern mind is as capable of conceiving noble buildings and of doing beautiful work as that of antiquity or of any age.

To name only a few buildings of different phases: St. George's Hall, Liverpool, Old Newgate, Westminster Cathedral, St. Agnes, Kennington, are noble conceptions as creditable to their authors as are the monuments of simpler times. Each in a sense is an example of a still living manner of expression; for every great period has contributed something that cannot die, yet of none can it be said that "this is vital," for none is in a language common to all.

We ask ourselves whether it is just now possible to find a language common to all. Anything added over and above the necessity of the case appeals either to the heart or the intellect—to both if it is a work of art. In the case of the mechanical art of the suburban villa and place of worship, the appeal is to the untrained eye. When the intellect comes in, whether in Classic, Gothic, or modern work, art becomes conscious; indeed, it is only when it becomes so and recognises the necessity for discipline and control that it can ascend to the heights.

On the surface, this confusion is not unlike that at the building of the tower of Babel, but below there is necessity and a basis of unity which will result in another era of vital art.

In our wanderings, whether to Versailles, among American sky-scrapers, or to Surrey farmhouses, we are, let us believe, doing useful service. Our admira-

tion of the civic sense of the Parisians is drawing us to inquire into their methods and aims; our intellect calls for the exercise and discipline of orderly and stately schemes shown in beautiful drawings. Our interest in the great American school lets us into the secret that the applied method of design is not satisfying the Western world. Our tours among old buildings have taught us the right use of material, and we have mastered the meaning and value of texture; our little experiments in the planning of pleasant urban dwelling places have shown us that while all things may be lawful all things are not expedient. So that besides producing individual instances of fine work, we have collected evidence which another generation will sift if we cannot.

Education consists in a series of enthusiasms, in a series of awakenings. Beginning with the architect and craftsman, it filters down through the trades and through the public. If education is only skin deep, so are shams. If the false ideals that have so nearly smothered the crafts have taken a hundred years to grow up, why should they not pass away in a like period of time? The craftsman knows that the attributes of his art are not transitory; they may be dimmed in times of prosperity or change, but if they are buried 3,000 years, like the corn in an Egyptian sarcophagus, they will spring to life again in a suitable environment. For a time the environment is unkindly, and the practice of architecture and the crafts calls for considerable qualities.

Discussion.

Mr. Edward Warren (Master of the Art Workers' Guild), in moving a vote of thanks, said that the question of the control of the crafts was both difficult and complicated, and it became architects to study as far as possible the crafts with which they had to deal. Despite the introduction of new materials and new methods of construction, a number of the old traditional crafts remained—masonry cutting, for instance. If they eliminated the steam saw and relied on the mason with his chisel, they could still get work done very much as it had been done for the last two hundred years. It was hopeless, however, for the architect to expect, by the assimilation of ancient methods, to get the ancient results. We had got to accept the methods of the age in which we lived. The architect could at least have the satisfaction of seeing that the inevitable piece of machine-made work was appropriate to the place in which it was fitted. Concluding, the speaker urged the advisability of getting craftsmen who had had building or architectural training. A carver might be able to carve something which would be perfectly delightful as an individual object, but which, nevertheless, would be hopelessly out of place in the general scheme of a building. If architects lacked training in the crafts, it could be said with equal truth that craftsmen lacked training in architecture.

Mr. C. F. A. Voysey, seconding the motion, said that the craftsman needed to be possessed of an intellectual feeling before he could do anything good. Ethical feeling was as essential as technical training: indeed, it was the former which had to be expressed in the craft. The craft which expressed no intellectual idea they were better without. Even in the comparatively monotonous task of laying floor boards the ethical idea was valuable, helping and stimulating the craftsman in his work.

Mr. Walter J. Tapper said it seemed to him that the whole modern system was wrong. From mediæval times upwards craftsmen were doing work in a more or less self-contained way; but it was hardly possible even to think of that kind of work in connection with a huge modern city building, the governing factors in which were rapidity and cheapness of erection. Real craftwork nowadays was only possible to the wealthy connoisseur, who liked to indulge his taste, or to the

people who desired to have nice things in their own houses. He did feel that in these days we ought not to expect anything very great in craftsmanship.

Mr. W. J. Allcorn protested against the methods of the "arty" architect, who insisted upon breaking up beautiful slabs of stone-paving into little pieces for the sake of effect.

Mr. G. Leonard Elkington said he thought that the architect was much to blame for the divorce of craft and design. It seemed that architects had tried to create a "corner" in design, and in consequence men had lost interest in their work. The problem was how to help workmen to regain that sense of design in their craft, and he believed that the solution would only be found in allowing them some share in the designing.

Mr. Knapper said he had a tremendous respect for old buildings, but what did they look like when originally built? Certainly not as they looked at the present day, with all the craft-work broken and mutilated. In the opinion of some architects, if a thing was not damaged it was not artistic; but surely the aim of the craftsman should be to produce something which was in every respect perfect.

Mr. Halsey Ricardo said it was humanity that really made art interesting; it was not age nor imperfection, but the human touch. A building became artistic when time and all its associations had worked their spell. With regard to the position of the crafts, we had got to recognise that we were living in our own epoch, by whose instruments and usages we were naturally governed. The crafts, nowadays, were regarded rather as luxuries, and it was necessary to see that what was done was very good. And yet an awful lot of experiment must always be going on. In mural decoration, for instance, tradition had disappeared, and to-day we hardly knew how to decorate a wall surface. The public, unfortunately, did not recognise the business side of the crafts. All over London there were technical schools and schools of art, at which the arts and crafts were taught up to a certain point. And yet, in spite of this lavish expenditure of public money, those who received tuition were not allowed to do any work. We had a County Hall in course of erection. Why not let the necessary painting, sculpturing, carving, etc., be done by the schools? The young men of the present day might become efficient if they only had the chance of doing the work.

Mr. W. S. Frith said that naturally the architect wanted to get the very best from his craftsman, and the only way to achieve that end was by a more intimate association between the two. He, personally, was convinced that we had as good craftsmen to-day as had ever existed. Carving, in which he was most interested, was such a very personal matter that he failed to understand how it could be undertaken by firms. Business had been mentioned in relation to the crafts, and, unfortunately, it was sometimes desired to get a certain amount of work done for a certain sum of money. It was then necessary to find the man who would scamp the work most; the man with the least knowledge and the least skill would, of course, do it cheaper, and accordingly he got the commission.

Mr. Gerald C. Horsley said that, after listening to the papers and the speeches, he thought the whole question came down to this: that they wanted more understanding between themselves and their co-workers. The want of sympathy between the architect and the craftsman was due to the unfortunate loss of tradition which had taken place in their art. They must all endeavour to bring back the spirit and feeling which moved the old tradition. They found it in St. Agnes, Kennington Park, and in St. George's Hall, Liverpool. There the architect and craftsman had worked in accord, because each had tried to understand the other. After all, the great object of training was to get not only a knowledge of one another's work, but a common spirit to animate it.

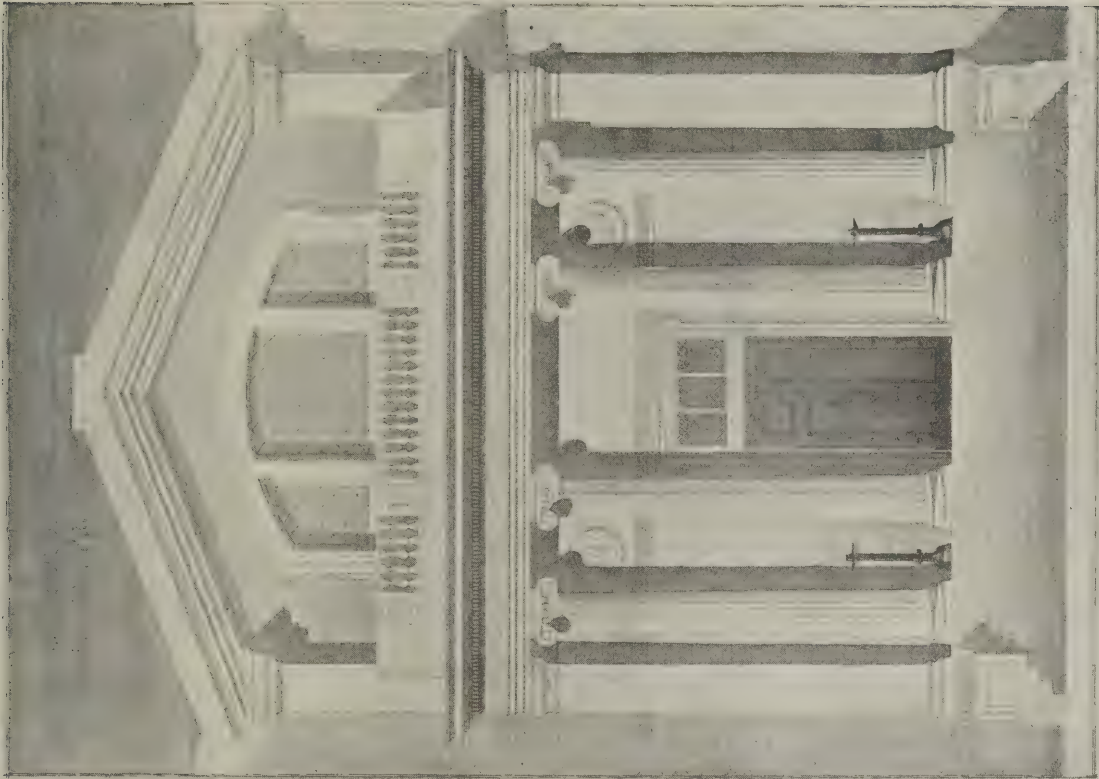


Telephoto: Architects' and Builders' Journal.

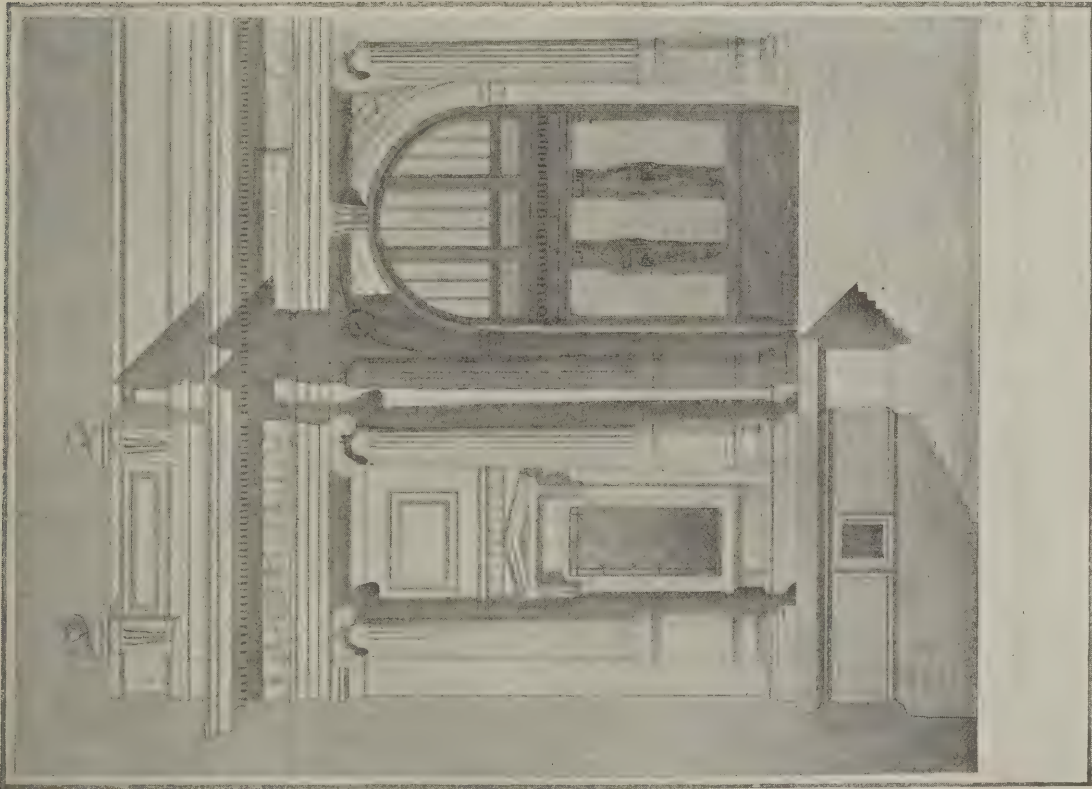
DETAIL OF SELFRIDGE STORE, OXFORD STREET, LONDON. R. FRANK ATKINSON, F.R.I.B.A., ARCHITECT.

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STUDENTS' PAGE.



By A. Wilson.
TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION : APPROVED DESIGN FOR SUBJECT V. (a)—AN ART GALLERY.



By R. S. Dixon.

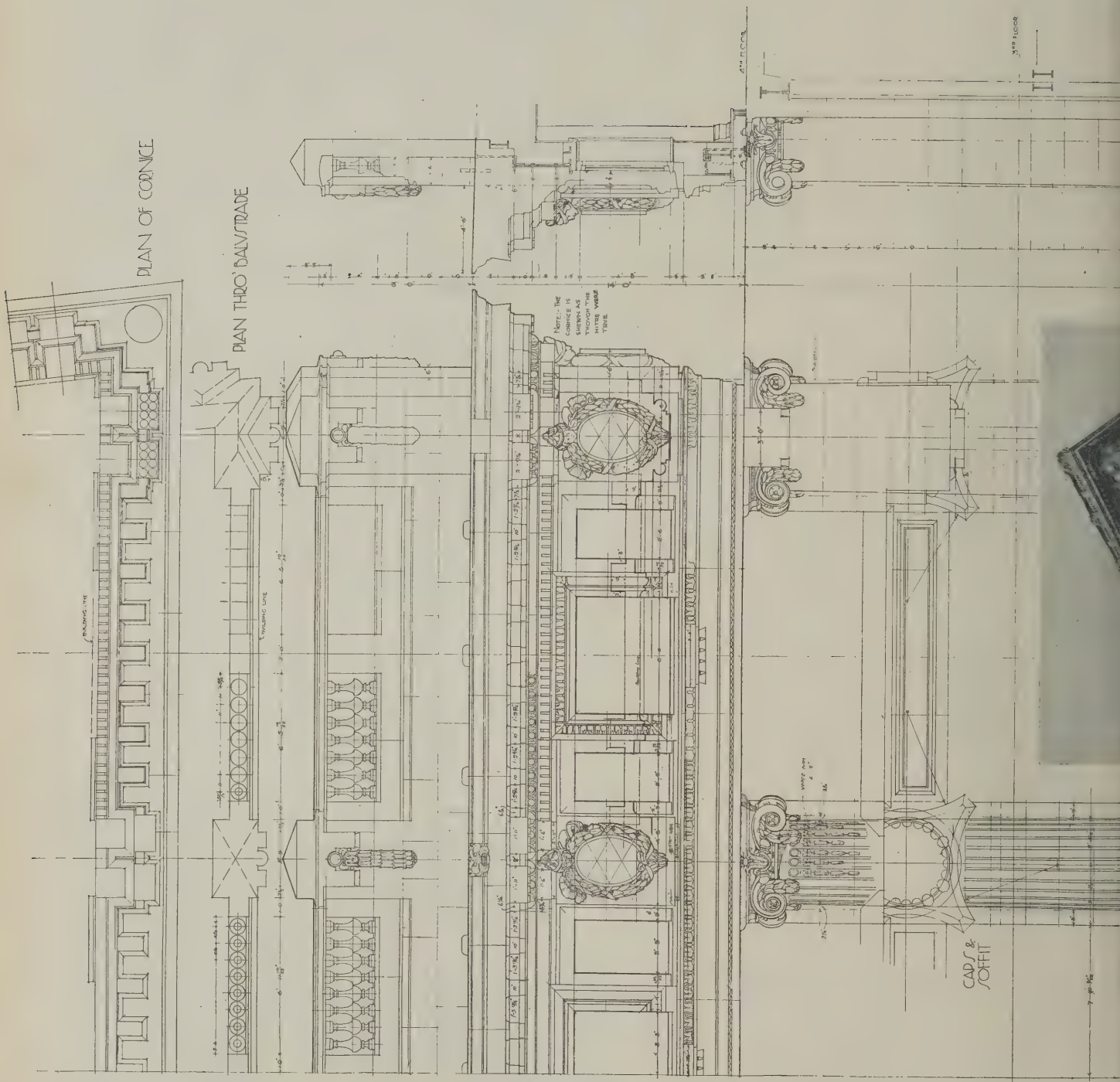
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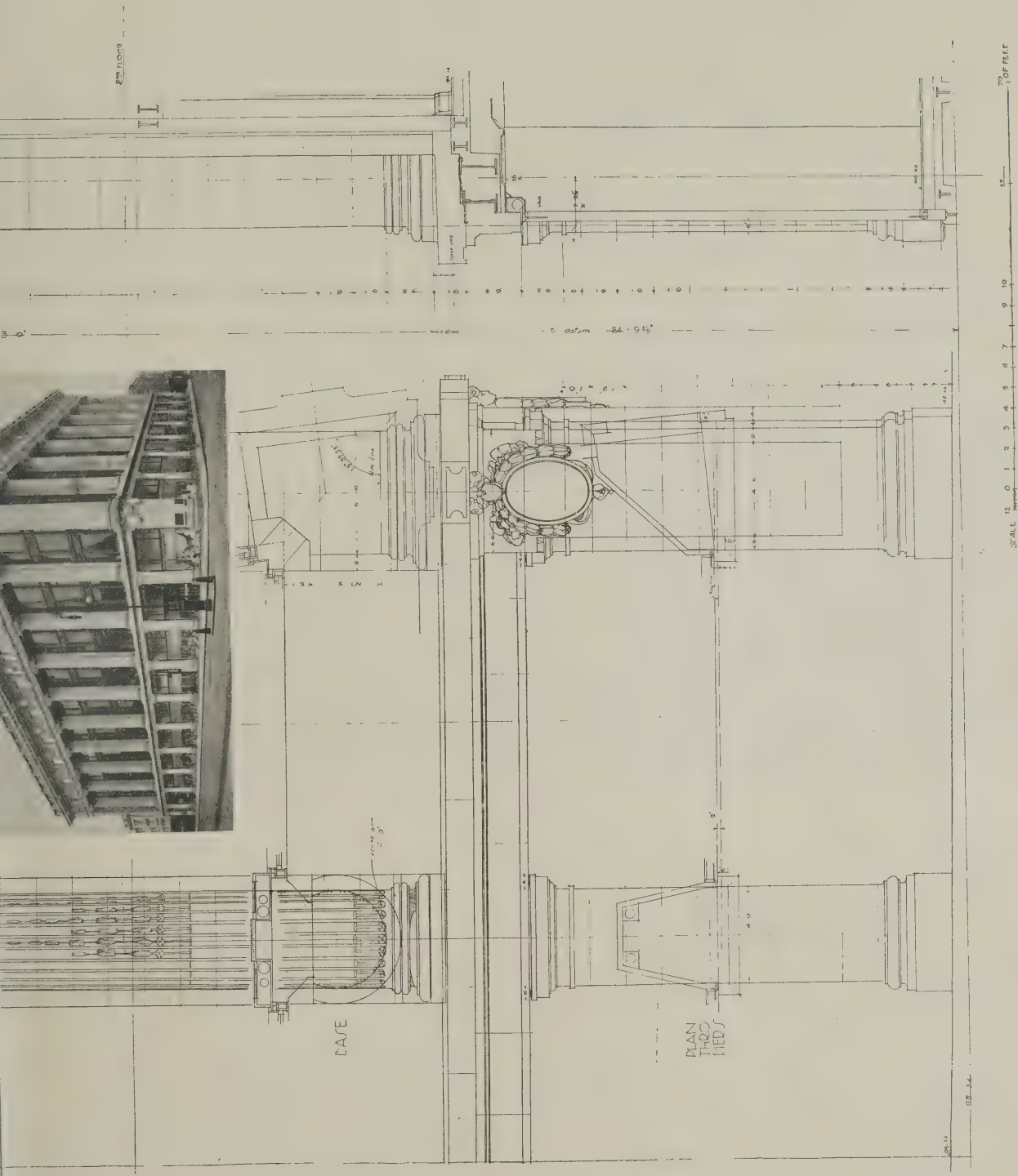


SCHOOL OF ARCHITECTURE, HARVARD UNIVERSITY. MCKIM, MEAD AND WHITE, ARCHITECTS.

PLAN OF CORNICE

PLAN THIRD BALUSTRADE



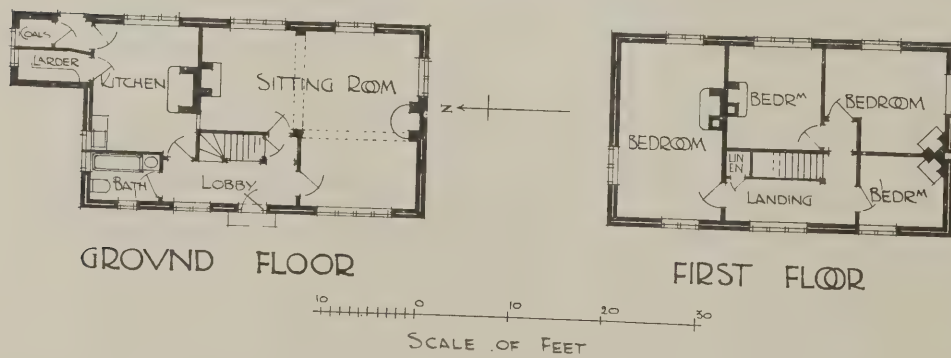


WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS. IX.—THE SELFRIDGE STORE, OXFORD STREET, LONDON.
R. FRANK ATKINSON, F.R.I.B.A., ARCHITECT.



LARKESBEARE" near OXFORD

Clough Williams-Ellis, Archt.



NASH'S REGENT STREET.

BY ALFRED W. S. CROSS. F.R.I.B.A.

ORIGINALLY planned to connect Carlton House, then the residence of the Prince Regent, with Regent's Park, and leading from Waterloo Place to Oxford Circus, and thence to Langham Place, Regent Street was commenced in 1813 and completed some seven years later. The plans of the new street and the control of the architectural treatment of the buildings fronting the thoroughfare, from the church of All Souls in Langham Place to Carlton House, were entrusted to one architect—John Nash. Adopting a circular formation for the lower portion of the street, Nash was enabled to extend the thoroughfare, from end to end, in an unbroken line nearly a mile in length. Although it is impossible to speak in terms of unqualified praise of the architecture of every individual structure erected upon the long straight or curved frontages which abutted upon the new roadway, yet, judged as a whole, Nash's Regent Street was a great architectural achievement. For not only was it a satisfactory solution of a difficult problem in civic planning, but its buildings and surroundings bore the impress of a master mind.

When first constructed the new street was one of the widest and—then as now—one of the most important thoroughfares of London, and its architecture was carefully studied and arranged with the view of maintaining artistic continuity and harmony from end to end. Despite the fact that many of the old buildings are still in existence, it is difficult to recall the appearance of Regent Street nearly a hundred years ago; for the charming simplicity of much of Nash's work has been marred and its effect spoilt by the insertion of numerous startling examples of the æsthetic taste of modern shop-fitters. In addition, the juxtaposition of lofty modern buildings, in some cases indescribably vulgar and repulsive in design, has utterly ruined the scale and proportions of the older work in the immediate neighbourhood.

The architecture of Regent Street was formerly expressed in groups of buildings, generally four stories in height above the ground floor shops, the skylines of which were emphasised, where necessary, by the addition of attics. Finished with the popular stucco facing of the time, the fronts of the Georgian buildings were either quite plain and unbroken or relieved by columnar arcading. Harmonising with each other both in proportions and style throughout the entire length of the street, the architectural quality of the buildings ranged in varying degrees of merit, from occasionally feeble to some really good examples of commercial architecture. The long, well-proportioned façade, embellished with a central pediment and three arcades of the Corinthian order of the still existing building, which occupies the whole of the intervening frontage between Beak Street and Regent Place, exemplifies Nash's work at its best. On the same side of the street, some distance southwards of the last-mentioned building, the simple arcaded front of the County Fire Office recalls the days when absolutely bad street architecture was the exception and not, as now, the rule in England.

At the Quadrant the fine unbroken curved surfaces and architectural lines of the buildings terminated in appropriately designed domed structures, which were merely sufficiently accentuated to prevent the monotonous effect of unbroken skylines. The introduction of these domes, quiet, refined, and restrained in treatment, and carefully proportioned to suit the scale of their surroundings, was in no way detrimental to the architectural harmony and unity of the general scheme. On the contrary, the domes served to emphasise the salient terminating points of individual groups comprised in the general design, and the simple

unaffected character of their treatment was not the least of the many charms of old Regent Street. Well-designed colonnades marked the intersections of the cross streets, vistas were carefully considered, and scale and proportion maintained throughout. And if the architecture occasionally fell short of a very high standard of excellence, there is no doubt that it was sufficiently good to cause Regent Street to become one of the most attractive thoroughfares and the brightest shopping centre in London. (Extracts from an article in the "American Architect.")

MR. JACKSON AND CHRISTCHURCH PRIORY.

IN reply to the charge of vandalism made by the Society for the Protection of Ancient Buildings with respect to the restoration of Christchurch Priory, Hants, Mr. T. G. Jackson, R.A., has written a long letter of explanation and defence to "The Times":—

"The north transept," says Mr. Jackson, "was blocked by an ugly and useless gallery where nobody ever sat, and which, had it been used, would have been a death-trap in case of panic. The floor below was filled with shabby deal pewing, concealing the beautiful arches of the chantries on the eastern side, and the Norman wall arcading on the western, which was barbarously mutilated in order to receive a dado of deal. The floor was broken up and roughly boarded, and the walls were cut to receive the gallery supports. The gallery has now been removed, as well as the deal pewing; the chantries are once more restored to view; the walls have been mended, the floors made good, and new steps of stone and new seats of oak have been provided. Some ancient tiles which were discovered under the modern deal floors, though much broken and very imperfect, have been or are now being relaid.

"The angle pier of the chantries was badly split, much of the stonework was crushed, and it had been cut into by the beams of the gallery. Its condition was dangerous, and its repair involved a difficult and delicate operation, which caused me some anxiety. It has, however, been secured by new bonding stones and new masonry in place of what was crushed.

"The use of some old colonnettes that were found in the crypt to replace the missing shafts of the Norman arcading was made by the foreman while I was abroad. I should not have allowed it, and I proposed to have them removed, but under the circumstances the vicar and committee have decided that this is unnecessary.

"Other instances of vandalism are hinted at but not cited. All the work done to the fabric during the past few years has been of the nature of structural repair. The fourteenth-century timber roof which exists above the plaster groining of the nave has been secured instead of being removed, as had formerly been intended. The tower has had the loose parapets and pinnacles repaired, and the masonry cleaned from plants which had done serious damage, a great deal of the facing-stone being forced more than an inch out of the wall. The south nave wall has been underpinned, and the slating repaired throughout. The groining of the Lady Chapel had suffered by the expansion of the ironwork with which it was put together, and the great springing stones were burst and on the point of slipping, which would have brought the whole vault to ruin. They have been carefully repaired, the ironwork has been removed, and the whole of this beautiful ceiling is made sound and secure. Lastly, the remarkable reredos in the choir, which was injured in the same way by its iron cramps, has been carefully repaired and made safe without removing any of the original stone.

"This is, I believe, a faithful account of our vandalism. What we have done to earn this name your readers will now be able to judge."

CORRESPONDENCE

*The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents.
Correspondents are asked to be brief and to write on one side only of the paper.*

Registration and Education.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Referring to the leader under the above heading in your issue for December 4th, surely any Registration Bill must, to have the slightest chance of success, protect all vested interests; and if, when such a Bill is printed, the Guild of Architects' Assistants find that their suggestions have not been taken into consideration, they may then have some cause for complaint.

In regard to the question of architectural education, to which you also refer, when a proposal was recently made for the introduction into the United Kingdom of the atelier system for teaching the principles of architecture on the lines of the Ecole des Beaux Arts, you expressed the opinion that such a proposition would not command the support of the profession generally. You now state that the high position which the American architect holds is due to the architectural training he has received, and that a similar result would be secured here if similar methods were adopted.

The author of an article on "The School at Rome," in the same issue, states, in effect, that Canada has turned her back on English architecture and has given most of her important architectural commissions to men trained in the American or French schools, and the author prophesies that these are the men who will carry off the earlier honours of the School of Rome. Exactly; that is the crux of the matter. Evidently, in the United Kingdom there are not the same facilities for architectural education on Beaux Arts lines as exist in France and America, and as a consequence home-trained architects are practically ignored outside their own country, and admittedly have very little chance of success when competing for international honours.

This is the chief reason why a number of well-known architects (one of whom, by the way, Mr. Arthur Davis, of Messrs. Mewès and Davis, is not an F.R.I.B.A. nor a member of any architectural body) have joined together and formed an independent committee with a view of adopting similar methods to those advocated by you. But what strikes me, and possibly others, as rather curious, is that you should condemn in one connection a proposal for which in another you have nothing but praise.

C. MCARTHUR BUTLER,
London. Secretary, Society of Architects.

[The point at issue between the Society of Architects and ourselves is not that the French atelier system of teaching is, in itself, inapplicable to English needs—on the contrary, we thoroughly believe in it as the only system of training in architectural design—but that for its success it requires as leaders of the ateliers men who by experience and training can give the student the sort of criticism and help which is the backbone of such a system. Mr. Butler mentions in his letter that the Society of Architects have been fortunate enough to secure the services of Mr. Arthur Davis, of Messrs. Mewès and Davis, to act on the committee of the proposed atelier in London. If this means that Mr. Davis is going to take an active part in the work of the atelier, that he is going to help in setting the problems and in criticising the drawings in course of execution, and that he will be a member of the jury making the awards, the Society of Architects is to be heartily congratulated. Mr. Davis, by his training at the Ecole des Beaux Arts and by his executed work, is eminently fitted to help in an atelier, or,

better still, to have one of his own. It was an extraordinarily unfortunate mistake for the Institute, and for every one concerned (as, indeed, all now admit), when the Associates, for the sake of a general principle and in ignorance of Mr. Davis's identity, prevented his election to a Fellowship. If Mr. Davis would consent, it would be a graceful and proper tribute to his scholarship and work if the Institute were to elect him direct to a Fellowship, as they have still power to do in cases of exceptional merit. They have quite recently done so in the case of Mr. Gilbert Scott. The Society of Architects, however, seem to imagine that by starting ateliers for students they are inaugurating a system wholly unknown in this country. We should be much surprised if even the Architectural Association School did not claim that their advanced students to-day work on very similar lines. Certainly the Liverpool School makes such a claim, and has done so for the last eight years, with results which can often be seen in this journal. After all, what does the atelier system mean beyond a number of students working together in one studio under criticism at a series of competitions for large architectural projects? If this is held up as something new and unheard-of in England, there will be much disappointment when the Society puts its scheme into practice. The real difference in the matter between America and France on the one hand, and England on the other, is that in the former countries the large majority of architects go through such a training, extending over four years or more, while in England at the present time a very small minority do so, and do it for a much shorter period. Even so, we have evidence of English students from the Liverpool School who have gone to Canada and taken highly paid assistantships side by side with draughtsmen trained in France and America. When architectural education extends in England to anything like its position in France and America, there is no reason why English architects should not reconquer Canada. Mr. Frank Simon, another example of the requisite training, is already leading the way.—EDS. A. AND B.J.]

An Imperial Senate House.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—At the present time we have in our midst the representatives of the belligerents in the Near Eastern War, and we are about to form an Imperial Council at which our Colonies will be represented. Instead, therefore, of having to turn here and there for a suitable place for these great Conferences, would it not be far more fitting if there were a noble building specially erected for such meetings? And what better name for it than the Imperial Senate? It might be of Classic design, built of white marble, and having for base a wide platform reached by flights of steps. The terrace might have four Landseer lions at the corners and in the centre a monument to King Edward VII. The entrance might give access to a colonnaded ante-room, with waiting and robing rooms on the ground floor, and a fine flight of stairs on the opposite side leading to a long oval council chamber, lighted from above. The walls of the council chamber might be of white marble, with columns and niches containing statues of our Empire builders. The furniture should be of black oak, hangings and carpets of the deepest crimson, metallic fittings of silver and black. At the far end of the room would be the Throne, and above it two small balconies, where trumpeters would announce the entrance of the King.

As to the cost of the building, that might easily be defrayed by issuing a 3d. stamp having the Imperial Senate House engraved upon it.

ARTHUR L. GROTE.

London.

*The Publication of Assessors' Names.**To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.*

SIR,—I was glad to read in your issue for December 4 some extracts from Mr. C. F. A. Voysey's letter to the Royal Institute of British Architects in reference to the publication of the assessor's name prior to designs being submitted in competition. Many men, I am sure, will agree on the whole with Mr. Voysey's letter, for, unfortunately, there always exists in the mind of the competitor a particular style by which the assessor is known. I do not agree with the view expressed in your leader that there is no harm done by this. There may not seem to be much, but this can only be measured by the way in which it affects each individual. In my opinion the publishing of the name of the assessor or assessors always puts a man's work under a certain amount of restraint, his own ideas having to become subservient, whilst the most dominant feature in his mind has ever to be that particular assessor's style. Only the other day I heard a well-known provincial architect—a member of the Institute—say that he had not entered for a certain competition because he was not in complete sympathy with the work of the assessor who was to adjudicate the designs. Surely, this goes very far to prove that the best chance of success lies in the competitor's playing up to the assessor's own style. How often do we not find this sort of thing? It is, of course, essential in all competitions to have a qualified assessor, but the qualms of any man ought to be satisfied by a statement that a member of the Royal Institute of British Architects had been appointed as assessor.

Bradford.

ARCHITECT.

[This is a matter of opinion. We have already expressed our own views, and so far as we are able to learn they receive far more support among the profession than the opposite views expressed above by our correspondent.—EDS. A. AND B.J.]

*Comparative Costs of Various Methods of Construction.**To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.*

SIR,—The article on the above will have been, I am sure, highly appreciated by most readers. Mr. W. J. Swain, of York, seems to be an exception, however, and appears to have overlooked the note at the end of the article—"I have only to add . . . local prices . . . and other considerations," with the result that he has touched on several points that are ruled by certain districts.

What I should like to know more of is "good rubble walls 20 in. thick executed at 4s. 6d. per square yard."

Will Mr. Swain give us figures "as to costs of material and labour on which he has based his estimates," and take into consideration that "the value of work increases as the building rises"?

Edinburgh.

THOMAS L. CRAIB.

*Practical Points in Reinforced Concrete Construction.**To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.*

SIR,—Surely Mr. E. P. Wells, in his otherwise excellent paper, does not seriously intend us to believe that the "lever arm" could possibly be the full "effective depth" of a reinforced concrete beam, or, even if so, that it was due to the increased strength of the concrete, as this would effectually dispose of all mathematics on the subject, and incidentally, I fear, of "common-sense" at the same time. Also, why not extract the square root of 2 if necessary?—indeed, I have frequently done so with much profit, until I succeeded in remembering that it is 1.414.

Dublin.

C.

MODERN SMALL HOUSES.

ANOTHER small house by Mr. Clough Williams-Ellis, of London, W.C., is reproduced on page 660 as the eighth example in our new series.

"Larkesbeare" was built at a cost of about £425 on a hill near Oxford. The walls are 11 in., with cavity, rough-cast, and the roof is covered with interlocking corrugated tiles. There is a large room capable of being permanently divided into two at any time—fireplaces and doors being in duplicate; but as the house was designed primarily for holiday use, the one large room is most desirable for the present.

The owners of the house being keen gardeners, a downstairs lavatory for frequent and thorough washings was a necessity, with space for garden boots and wraps, etc.; and the bath being placed in this same compartment, space was enabled to be allotted that might otherwise have been grudged. An extra bedroom is thus, incidentally, secured upstairs, and a considerable saving effected in plumbing.

The lobby and bathroom and the kitchen and offices are tiled. A hatch (interlocking) is placed between the dining-room and the kitchen.

The wooden string-course is for shelter to the heads of the lower windows.

R.I.B.A. PROBLEMS IN DESIGN.

TWO further designs for an art gallery submitted as Testimonies of Study for the Final Examination of the Royal Institute of British Architects—Subjects V. (a)—are reproduced on page 655 of this issue. They are by Mr. R. S. Dixon and Mr. A. Wilson respectively, both of the Liverpool School of Architecture. The conditions stated that the gallery was to be in a public park, and the drawings required of it were plans, sections, and elevations to $\frac{1}{8}$ in. scale and details (external and internal) to $\frac{1}{2}$ in. scale, shaded.

WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS.

THE Selfridge Store, of which we reproduce a detail of the corner bay of the main façade as the ninth example in the above series, was erected in 1909 from the designs of Mr. R. Frank Atkinson, F.R.I.B.A. The building, which has given a new scale to Oxford Street, is a remarkably fine composition. The ground-floor storey carries a giant colonnade, which in turn supports a heavy cornice with balustrading. The windows of the first, second and third floors are embraced by the Order to its total height, a method of fenestration which, although common enough in America, is somewhat novel in this country. The windows themselves, contained in cast-iron frames, have been arranged so as to offer the minimum amount of obstruction to light. The building is of steel construction, clothed with Portland stone. There are three basements, the lowest of which provides accommodation for the heating apparatus, electric light, artesian well, motor-room, etc. Storerooms for various departments occupy the sub-basement, while provision is made for staff and the dispatch department in the basement, together with space for sale purposes. Sale-rooms and other accommodation occupy the first four floors. A restaurant is placed on the fourth floor also, with kitchen, offices, etc., and a roof garden is arranged over it. The building contains nine passenger and two goods lifts, as well as six staircases. The many points of interest which it presents in design, planning and construction have been fully dealt with in previous issues.

ENQUIRIES ANSWERED.

Dry-rot in a Stable.

SUBSCRIBERS (Herts) write: "In 1910 a block of stables was erected, with sleeping accommodation above for grooms. The floor above the stable was constructed with deal joists, lathed and plastered as a ceiling to the stable, with 1-in. sq. jointed deal floor to rooms over. The spaces between the joists were pugged with chopped hay and hair mortar (dry), on rough boards carried by fillets spiked to the joists. Dry-rot developed, almost entirely destroying the floor boards, and the joists also to some extent. The walls (11 in. cavity) are perfectly dry, no ventilation was provided for the spaces pugged, and the floors were covered with linoleum immediately after completion. In your opinion, would a floor so constructed be liable to dry-rot, or would the linoleum, by entirely closing the joints in floor boards, be the actual or contributory cause?"

—The presence of an alkali such as ammonia was found to be necessary for the germination of dry-rot spores, and these conditions are found in stables, outbuildings, etc., where ammoniacal or alkaline emanations reach the timber. In the present case either this or the covering of the floor with linoleum is apparently the cause of the trouble. Despite the above statement of the theorists, many stables where timber is used are no doubt free from dry-rot. It is usual to put wooden divisions between the stalls, and these may last for many years.

Books on Malting Kilns and Reinforced-Concrete.

FERRO-CONCRETE writes: "Please name (1) the best and most up-to-date book on the design and construction of malting kilns; (2) a good, useful book for beginners on the construction and design of reinforced-concrete buildings apart from the recognised and patented systems."

—There is no up-to-date book on malting kilns. The only work of which we know is "Breweries and Maltings," by G. Scammell, F.R.I.B.A. (revised, enlarged, and partly rewritten in 1880 by F. Colyer, M.Inst.C.E.), 6s. net. The following books on reinforced-concrete would serve your purpose: "Reinforced-Concrete Construction: Elementary Course," by M. T. Cantell (4s. 6d. net), and "Reinforced-Concrete: Theory and Practice," by Frederick Rings, M.S.A. (7s. 6d. net). All the above may be obtained through Mr. B. T. Bastford.

Mansard Roof with Pantiles.

CORRESPONDENTS write: "We are wanting information concerning the proper laying of old pantiles on a mansard roof. The span of the roof is 22 ft., the two pitches being 33 deg. and 65 deg. What is the right method of dealing with the ridges, hips, and valleys? Would it be advantageous to bore and nail the tiles on the steep pitch? What should be the construction where one pitch overlaps the other? The house is in a very exposed position on the coast, and we do not wish to run any risk of driving rains."

—Though old mansard roofs are often seen covered with pantiles, this form of roofing is not specially appropriate, for at least three reasons: (1) That the steep pitch of the curb is apt to throw the water

from the furrows so briskly as to overshoot the gutter; (2) that the steep-pitched part gives insecure fixing for the tiles, of which the weight, individually, is about $5\frac{1}{4}$ lb.; and that the junction of the two pitches is difficult to weatherproof in a really satisfactory manner. The low pitch covered with pantiles and the curbsides with plain tiling is a better arrangement.

Dealing with the points in order: The ridge requires no special treatment; the furrows of the tiles may be packed up with slips of plain tile, as described in the JOURNAL for November 22nd, 1911. No better treatment than the ordinary half-round hip and ridge tile is possible at the hips, as pantiles do not lend themselves to a really satisfactory hip finish; they are suited to a simple gable form alone. The valleys may be close cut with a wide lead gutter beneath or a (somewhat risky) open valley may be formed by first laying a row of pantiles down the valley and cutting the edges of the slopes to lap over same. It would be distinctly advisable to bore the old tiles and nail them with stout nails on the steep pitch.

In old work the junction of the two pitches is commonly only pointed up with lime and hair. A lead apron flashing carried up under the shallow slope and dressed down over the curb would make this point more secure, but probably in excess of the rest of the roof. Furthermore, dressing lead over pantiles is a considerable task (another reason for plain tiles on the steep pitch).

In view of the exposed situation, it will probably be better to overlay the roof boarding or rafters (if no boarding) with stout Willesden paper, properly lapped to exclude any rain which may penetrate the tiling, rather than to depend on the pointing and bedding alone to exclude it. Counterbattening below the tiling battens will allow this moisture readily to find its way to the eaves. G.

Responsibility for Additional Tap.

W. H. E. writes to the effect that houses officially certified in 1906 to be fit for human habitation are now the subject of complaint on account of the drinking water supply, an extra tap for drawing off water from the main before it reaches the cistern being demanded. The tenant is asked to contribute half the cost, but refuses to do so. In this attitude he is supported by the inspector of the Medical Officer of Health, who issues a notice for the provision of the tap wholly at the landlord's expense, it being alleged that the cover to the cistern is not dust-proof nor hermetically sealed. The agreement between landlord and tenant provides for the maintenance of the property by the latter in good tenantable repair, and also for the payment of "outgoings" of every description "assessed or made payable by the landlord or tenant upon or in respect of the said premises."

Our correspondent asks: (1) "Are the authorities within their legal rights in attempting to force the landlord to do this work? and (2) if so, can the landlord, under the terms of the agreement, request them to serve notice to the tenant? If not, cannot the landlord compel the tenant to pay?"

—The fact that the water supply and fittings were in order in 1906 does not affect the matter at issue at all; it is quite pos-

sible that repairs may now be needed which were not then necessary.

Neglecting all the "by-gones" in the inquiry, I am of opinion that: (1) The Local Sanitary Authority are within their legal rights, if the danger to health is real and not merely fanciful; it is a question of fact in this respect. (2) I think the liability rightly falls upon the tenant, because he has covenanted to keep the premises in tenantable repair.

Apart from all legal considerations (which, after all, are always liable to doubt on one side or the other) is not it easier to do this work than to have any worry or trouble about it?

Why do you not cut out the cistern altogether? It is surely quite unnecessary to have one at all in a town which, I presume, possesses a "constant" water service.

F. S. I.

Workmen's Compensation.

H. and S. write: "The insurance rates for workmen's compensation are again being raised, although they were increased only a year or two ago to what was then considered a high figure. What are the actual rates for machinists, carpenters and joiners, bricklayers, plumbers, painters, and labourers?"

A 90s. rate for machinists is charged on their whole time, although the men in question are only working machinery for about one-eighth of their time. Is this the usual way of charging?

—It is true that rates are being again advanced by insurance offices generally, but it cannot be said that advances are not justified, because it is well known that workmen's compensation business has not been profitable. The real cause of the trouble is the ever-increasing cost of compensation, which is likely to continue until the Compensation Act is amended.

Builders have already sought to protect themselves against high rates by forming insurance companies of their own, managed by themselves, such as the Builders' Accident Insurance, Ltd., which is a mutual company of London, and the Federated Employers' Insurance Association, Ltd., which is a proprietary company of Manchester, from either of whom our correspondent will doubtless be able to obtain as favourable rates as from any, while both issue policies specially framed to meet the requirements of the building trade.

No doubt he will find the point he raises about machinists dealt with in a practical and equitable manner by these companies. All rates, however, largely depend upon the experience the insured has had; and general quotations are of little use.

A. G. W.

Clerk of Works and Stolen Materials.

LABOR OMNIA VINCIT writes: "The offices of the clerk of works and the builder's foreman on a building in course of erection, and also the shed provided for the men's tools, have been broken into and robbed by burglars. The builder is responsible under the contract for structural and decorative damage to property; and the specification and quantities contain a clause making him responsible for all material that may be lost or stolen, and for the provision of a night watchman, if the builder thinks fit, at his own cost. No watchman, however, was provided. The clerk of works applied to the builders to be indemnified for the amount of his loss

LEGAL.

The Illegal Use of the Letters R.I.B.A.

On November 15th, before Mr. Justice Warrington, in the Chancery Division of the High Court of Justice, the Royal Institute of British Architects secured judgment with costs (by consent) against Mr. H. H. Reynolds, architect, of Birmingham, an injunction being granted restraining the defendant from using the letters "R.I.B.A." after his name in such a manner as to represent that he was a member of that Institute.

Action against Architect for Libel.

In the King's Bench Division of the High Court of Justice last week the case of Addis v. Farquharson was heard before Mr. Justice Pickford and a common jury. This was an action brought by Mr. A. E. Addis, a building surveyor, against Mr. Horace Farquharson, architect, for damages for libel.

Counsel for the plaintiff said (as reported in the "Times") that when the alleged libel was written the plaintiff was examining on behalf of Lord Decies at Sefton Park certain work done by Messrs. Holland, Hannen, and Cubitts, Ltd., under a building contract. A claim was being made by the builders under the contract against Lord Decies. The defendant was the architect under whose supervision the work was carried out and on whose certificate the payments for the work were to be made. The plaintiff was employed by Mr. Anderson, Lord Decies's solicitor, to measure and check the work. Mr. Anderson introduced him to Mr. Farquharson. It was eventually arranged that the plaintiff should visit Sefton Park with Mr. Morle, a member of a firm of quantity surveyors who were introduced into the matter by Mr. Farquharson. Mr. Addis went to the site with Mr. Morle. Mr. Addis gave him no list, but mentioned certain matters of which he made notes for his own purpose. Mr. Anderson having asked Mr. Farquharson to withhold his certificate, Mr. Farquharson wrote him a letter, from which, counsel contended, it might be inferred that the plaintiff was ignorant and incompetent, and unqualified to carry out the duties of a building surveyor.

For the defendant it was pleaded that the letter alleged to be libellous was a privileged one and written by the defendant in the discharge of his duty.

The jury found that the words were defamatory; that they were not true; and that the defendant had acted maliciously. They assessed the damages at £50 and judgment was entered accordingly.

District Surveyors' Fees in Respect of Steel-Frame Buildings.

At Lambeth Police Court last week Messrs. Spiers and Son, Ltd., builders, were summoned by Mr. Bernard Dicksee, district surveyor, for the recovery of £18 19s. 9d., fees alleged to be due to him in respect of a building at New Kent Road. This was a friendly dispute brought before the Court in order to obtain a decision as to the fees payable to district surveyors in respect of skeleton frame buildings. Before the London County Council (General Powers) Act of 1909 all the London Building Acts were based on the assumption that the buildings would be of brick construction. In order to meet the case of steel-frame buildings the Act of 1909 was passed. Section 26 of that Act provides

that the amount of the fee payable to district surveyors in respect of such buildings shall be equal to two and a half times the amount of the fee specified in regard to new buildings in Part I of the third schedule of the Act of 1894.

The contention of Mr. Pasmore, on behalf of the district surveyor, was that that fee was in addition to and not in substitution for the fee specified in the Act of 1894. The account of Mr. Dicksee was put in. It included an item of £4 2s. 6d., the fee chargeable under the old Act, in addition to the fee of £10 6s. 3d. payable under the 1909 Act, and it was to the former item that the defendants took exception.

Mr. Dicksee, in giving evidence, said the amount of extra work entailed by steel-frame buildings was perfectly enormous.

On behalf of the defendants Mr. Price argued that the natural interpretation of section 26 of the Act of 1909 was that the fee therein stated was in substitution for the fee provided by the Act of 1894.

The Magistrate, Mr. Hopkins, took that view, and gave judgment for the district surveyor for the amount claimed, less the £4 2s. 6d. in dispute.

THE LEIPZIG BUILDING
EXHIBITION, 1913.

One of the principal features of the International Building Exhibition, which is to be held in Leipzig next year, will be town-building and town-planning. Among notable German towns, the following have already announced their intention to be represented as exhibitors: Leipzig, Dresden, Mannheim, Posen, Bremerhaven, Darmstadt, Halberstadt, Aachen, Krefeld, Stuttgart and Frankfurt-on-Maine.

The last-mentioned town, one of the most important commercial centres of Germany, will be particularly well represented, exhibiting interesting photographs, pictures, models, plans, and statistics showing the development of the town from the year 1636 up to the present day. Water supply, canalisation, erection of smaller dwelling-houses, regulation of traffic, hygienic and benevolent institutions, hospitals, the laying out of playgrounds and parks, etc., will receive special attention.

Among the many other nationalities to be represented will be the United States of America. A special committee has been formed, under the presidency of Mr. Glen Brown, Secretary-General of the Association of American Architects, to take the preliminary steps and also to give every facility to intending exhibitors as well as to the general American public. A prominent feature of the American section will be the exhibition of numerous pictures, models, and plans of "skyscrapers," among which will be an excellent model of the "Woolworth House," designed by Mr. Cass Gilbert.

The municipality of San Francisco will have a prominent place. This huge city is not only the most important commercial centre on the Pacific coast, but, owing to its exceptionally mild climatic conditions, one of the most noted health resorts in the United States. In addition to many important municipal and commercial buildings San Francisco possesses numerous hotel palaces, public gardens, dockyards, etc., of which models, plans, and other illustrative material will be exhibited at Leipzig.

The associations of German linoleum and wall-paper manufactories will be collectively represented.

Books on Mechanics and Physics.

J. L. H. (Devonport) writes: "Kindly recommend a book on mechanics and physics suitable for the R.I.B.A. Preliminary and Intermediate examinations."

—Waldram's "Principles of Structural Mechanics" (7s. 6d.) and Wright's "Physics" (2s. 6d.), obtainable from Mr. Batsford, are suitable.

Practical Experience after Pupilage.

ABSTRACT writes: "I have completed my term of pupilage with a quantity surveyor, and am staying with him as an assistant. Kindly say if it is necessary to go into a builder's office to gain practical experience of building construction."

—The practical experience of building construction gained in a builder's office would be very slight, as you would be mainly employed in elementary work, upon which you have been engaged during your pupilage. Some valuable experience would be gained by spending a year or two in a builder's yard or joiner's shop, but having, as you state, completed a term as a pupil to a quantity surveyor, in my opinion you would be well advised to continue as an assistant, attend classes in building construction, and work up for the professional examination of either the Quantity Surveyors' Association or the Surveyors' Institution. A. G. G.

Hayes's Patent Iron Gullies.

We should be obliged if any reader could acquaint us with the address of the manufacturers of the above patent gullies.

Repairing Flagging Joints.

J. E. T. writes: "Kindly inform me of a cement or other material suitable for making good the joints of flagging which have become very much worn by the passage of trucks. The joints now hold liquid, which becomes offensive unless constantly cleansed with water. Portland cement has been tried, but without success."

—Querist does not say in what respect Portland cement has failed; in some cases it has been satisfactorily used. It is possible that asphalt may answer the purpose if the cavities afford a sufficient key, which seems doubtful. G.

Redhill Police Orphanage Extension.

An addition to the Provincial Police Orphanage at Redhill is to be erected at once from designs by Mr. J. Augustus Souttar, at a cost of £4,000. The new building will provide dormitories for forty-eight girls, with extensive bath and lavatory accommodation on each floor; eleven rooms for staff, new boiler house, stores, etc.

IN PARLIAMENT.

*(By Our Press Gallery Representative.)**The New City of Delhi.*

In the House of Commons, Mr. King asked whether an eminent architect other than Mr. Lutyens had visited India in connection with plans for the new Delhi; whether this architect was consulted by the Viceroy and reported to him in favour of Indian craftsmen being employed in the new Delhi; whether the expenses of this architect's journey were paid by the India Office; and whether, seeing that there was a conflict of expert opinion as to the manner and style in which the new Delhi should be built, further authorities would be consulted before a decision was taken.

Mr. Harold Baker, replying for the India Office, said: Mr. H. V. Lanchester was engaged to pay a visit to India as a consulting expert to advise as to the site for the new city of Delhi, his expenses being paid by the India Office. The further question of the construction of the buildings has yet to be decided, and the Secretary of State is not prepared at present to make a statement on the subject.

Mr. King asked what was the necessity of sending out Mr. Lanchester if full confidence was placed in the Advisory Committee which was already out there reporting on this very same question.

Mr. Baker said he had no doubt there was an advantage in having still another expert.

Mr. King asked whether the Government of India and the India Office were aware that there was a traditional school of architects and building craftsmen in India, and whether their existence would be considered in commissioning architects and builders for the structure to be erected in the new Delhi.

Mr. Baker said the circumstance mentioned, together with all other relevant circumstances, would be duly considered. The final decision in the question of architects and the style of architecture rested with the Secretary of State in Council.

Mr. King asked whether the pledge given by the Under-Secretary for India in the course of the Indian Budget debate, that there would be open competition for those buildings, would be carried out.

Mr. Baker said that if the pledge was given he was sure it would be carried out.

Westminster Hospital Site.

Sir H. Craik asked Mr. Benn, as representing the First Commissioner of Works, if he would say what power the Government had in respect of the site now occupied by the Westminster Hospital; and if, in the event of the removal of the hospital, that power would be exercised in order to secure that the site should be used in a manner suitable to the dignity of the situation and so as to provide for the highest public advantage in the future.

In reply, Mr. W. Benn said: The site cannot be used for any other purpose than that of a hospital without the consent of the Crown; and there are various restrictions as to buildings. The Government has the subject under careful consideration from the points of view suggested by the hon. member.

Regent's Park.

Mr. Cassel asked Mr. Wedgwood Benn, as representing the First Commissioner of Works, whether his attention had been called to a resolution passed by the Marylebone Borough Council protesting against the erection of any additional

buildings in Regent's Park and desiring that its value as an open space might be preserved for the use of the public, and whether the Government were prepared to give effect to this resolution by refusing to allow any buildings to be erected on any lands to be enclosed in the park, and throwing open to the public any lands now enclosed whenever leases fell in and a suitable opportunity arose.

Mr. Wedgwood Benn said the resolution referred to had been seen by the First Commissioner. The control of buildings in the private enclosures was not however within his control, but that of the Commissioners of Woods. It was the policy of the First Commissioner to acquire, as opportunity offered, parts of the enclosures, and to add the land so acquired to the area of the park.

THE UNITED SERVICE CLUB
EXTENSION.

The United Service Club, in Pall Mall, originally designed by Sir Charles Barry, has just been reopened after having been closed for five months for extensions and alterations. Last year the club bought the leases of the two adjoining house in Pall Mall, the site of which has provided about 45 ft. of additional frontage. These houses were pulled down, and on their site there is now, on the ground floor, a large room which, in conjunction with the old smoking-room, forms a fine dining-room in close connection with the kitchen. Above this, on the first floor, is a large private dining-room, which will also be used for meetings of the committee, and above this, and over a large portion of the second floor, will be thirty-nine bed-rooms and bath-rooms for the convenience of members passing through London. The old billiard-room at the top of the house is given up to this purpose; the card-room becomes a second billiard-room, and the room adjoining will in future be the card-room. The old dining-room, on the south front, has been converted into a fine smoking-room, with an outlook into the charming garden in front of Carlton House Terrace.

Another recent improvement is connected with the small library, which used to contain the collection of books formerly belonging to the Scottish philosopher Dugald Stewart, and bequeathed to the club by his son, an officer in the army. These books have now been transferred to the permanent custody of the University of Edinburgh, their place having been taken by an admirable and well-arranged reference library for military and naval students.

The extensions were carried out from the designs of Messrs. Thompson and Walford.

ARCHITECTS' NAMES ON BOARDS
OR HOARDINGS.

The following letter has been addressed by the Secretary of the Institute to the Councils of the Allied Societies: "The Council of the Royal Institute of British Architects have directed me to ask you to be good enough to call the attention of your Council to the following resolution which appears on page 13 of the R.I.B.A. Kalendar—'That it is undesirable for architects to exhibit their names on boards or hoardings in front of buildings in course of construction'—and to say that they will be glad if your Council will kindly take steps to bring this Resolution to the notice of the members of your Society."

COST AND EQUIPMENT OF
SCHOOL BUILDINGS.

Some interesting particulars relating to the cost and equipment of two newly built schools were recently given in "The Times" Educational Supplement. The first, an elementary school erected in the colliery village of Maltby, near Doncaster, for the West Riding Education Committee, seems to possess all possible amenities both for teachers and taught. The building, which gives accommodation for over 1,000 children, has been built round four sides of a square, with a large centre plot of lawn which will be used for open-air classes. All the classrooms open on to the quadrangle, and flat roofs—to be used also for open-air instruction—are a feature of the building. The school is fitted with an excellent system of ventilation, and the cloakrooms are provided with heating apparatus for drying the children's clothes in wet weather. The building is to serve as a model for others to be erected in neighbouring villages, and the West Riding may be congratulated on having built a fine school. At the same time due regard has been had for economy, as the cost works out at £10 2s. per head, exclusive of the site, or £11 3s. inclusive of the site.

Another new school on modern lines, which has lately been opened is one built by the Brighton Education Committee with accommodation for 310 boys and 310 girls. The classrooms are arranged to accommodate fifty children only instead of sixty as has hitherto been the rule, in accordance with the new regulations for lessening the size of classes. A special feature has been made of the ventilation and lighting; each classroom has an external wall and windows on either side, so that there is an abundance of fresh air and light. There are no internal corridors, but open verandahs connect the classrooms. The playgrounds have been made as attractive as possible, and classes will be held out of doors whenever the weather permits. The building contains a large hall, 45 ft. by 26 ft., and there are shower baths supplied with hot and cold water, and rooms for the medical inspection of the children. The school is warmed by means of a low-pressure hot-water system, and it is lighted throughout by electricity. The cost of the building was £8,732, which works out at £14 1s. 8d. per head, exclusive of the site of 7,200 square yards. It is the first school of this type to be built in the South of England.

The cost of these newer and more elaborate schools compares favourably with that of buildings of older types. For instance, in Bedfordshire the schools recently erected have cost from £9 8s. to £14 per head, with accommodation for 176 and 80 children respectively, exclusive of site, or £13 to £21 10s., including site. In West Ham one of the newest schools, which has accommodation for 1,308 children, cost £23 4s. 7d. per head including, and £21 10s. excluding, site. In Middlesex the cost ranges from £11 4s. 7d. per head for a school for 160 children to £16 10s. per head for one with accommodation for 1,143, both exclusive of site. Of the schools opened in Durham during the years 1910 and 1911 one built for 900 children cost £10 5s. 3d. per head and another for 280 children £17 0s. 7d. per head, whilst the average cost per head of all schools built in this county during the last few years has been £12 13s. 10d., the cost of the site being included.

COMPETITIONS.

New Guildhall for Devonport.

The Devonport Town Council adopted last week the report of the Municipal Buildings Committee recommending that designs be invited for the erection of a new Guildhall and municipal offices, at a cost not exceeding £70,000, exclusive of furnishing.

New Government Offices in Edinburgh.

In connection with the proposal to erect new Government offices upon the Calton Prison site in Edinburgh, a memorial from the Glasgow Institute of Architects, the Edinburgh Architectural Association, the Aberdeen Society of Architects, and the Dundee Institute of Architects was presented to members of Parliament last week, claiming that the design should be the subject of an open competition. Attention was called to what was described as "a public injury and a serious interference with the free practice of architecture in Scotland in the placing by the Government of the design of its building work in Scotland with His Majesty's Office of Public Works in Edinburgh, instead of, where possible, employing the services of outside architects." Moreover, it is pointed out, for years this practice has been on the increase, until now the amount of work controlled by the Office is much more than can be handled officially with good results.

LIST OF COMPETITIONS OPEN.

DECEMBER 20.—R.I.B.A. STUDENTSHIPS AND PRIZES.—Last day for submitting work, which must be delivered before 4 p.m. at 9, Conduit Street, W.

JANUARY 1, 1913.—EXTENSION OF MUNICIPAL OFFICES, DUBLIN.—The competition for the enlargement of Dublin Municipal Offices, in Castle Street, is restricted to practitioners in Ireland. The cost is estimated at £55,000, and the author of the selected design will supervise the work. Second premium, £150; third, £100. The latest date of application for conditions was December 2. Assessor, Mr. Albert H. Murray, A.R.H.A.

JANUARY 1, 1913.—APARTMENT HOUSES, BELFAST.—The Corporation of Belfast invite designs for 126 houses of two apartments each, and 126 houses of three apartments each, to be erected in Belfast. Premiums, £25, £15, and £10. Mr. Henry Seaver, B.E., Architect, Belfast, and Mr. H. A. Cutler, M.Inst.C.E., City Surveyor, will act as assessors. Conditions from the City Surveyor on payment of £1 is. (returnable).

JANUARY 31, 1913.—MUNICIPAL BUILDINGS, JAMAICA.—For an open competition, in which a premium of £100 is offered for the design of municipal buildings to cost £9,000, particulars, price 2s., may be obtained from Messrs. Young, Ltd., 60, Fenchurch Street, E.C.

FEBRUARY 3, 1913.—COUNCIL SCHOOL, HARROGATE.—The Borough of Harrogate Education Committee invite designs for an elementary school for 675 children. Particulars, C. E. Rivers, A.M.I.C.E., Borough Engineer, Harrogate.

MARCH 1, 1913.—MUNICIPAL BUILDINGS, RANGOON.—The Committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars (£1, returnable) from the London agents, Messrs. Ogilvy, Gillanders and Co., Sun Court, 67, Cornhill, E.C.

MARCH 1, 1913.—ROYAL PALACE AND LAW COURTS.—Particulars of this competition are obtainable from the Commercial Intelligence Department, Board of Trade, Basinghall Street, E.C.

MARCH 1, 1913.—CITY HALL, WINNIPEG.—Limited to British architects in Canada. Assessor, Mr. Leonard Stokes, F.R.I.B.A.

NO DATE.—NEW CHURCH, WORTHING.—Designs are invited for a new church to be built in South Lancing, at a cost of £4,000 to £5,000. Apply to Secretary of Building Committee, Rev. E. Peel, Lancing Vicarage, Worthing.

SOCIETIES AND INSTITUTIONS.

MANCHESTER SOCIETY OF
ARCHITECTS.*Mr. Buckland on Pitfalls in Practice.*

Mr. H. T. Buckland read a paper on "Pitfalls in Professional Practice" before the Manchester Society of Architects last week. Addressing himself to the younger members, he dealt with the small mistakes which architects would make. He said that these stood out in their memory after years of practice as the missed putts did to the golfer. Dealing first with damp in walls, he described the bricks of the Midlands, and went on to recommend cement mortar in the proportion of 8 to 1, in preference to ordinary hair mortar. He condemned the present tendency to design with flush sills and unthroated copings, and described how a tile creasing in one case had led the water right through the wall. Dealing with roofs, he referred to the unreliability of tiles. Passing on to foundations, he described the dangers of clay in dry weather. After touching on the shrinkage in timber, particularly maple, he went finally, into the question of the responsibilities of architects in law.

A vote of thanks was proposed by Mr. Hardisty, seconded by Mr. Lodge. In responding Mr. Buckland admitted that he knew a perfect remedy for a smoky chimney, but unfortunately he was unable to publish it to the profession at large.

SHEFFIELD SOCIETY OF
ARCHITECTS AND SURVEYORS.*The Removal of Plasterwork on Old Buildings.*

A vigorous protest against the "flaying alive" of English churches was entered at last week's meeting of the Sheffield Society of Architects and Surveyors by Mr. H. F. Traylen, A.R.I.B.A., of Stamford, who read a paper on Barnack Church. In speaking of the discovery of ancient plaster at this church, Mr. Traylen said that the very frequent practice of removing plaster was one to which he very strongly objected. There was no doubt that the plasterwork was as old as the original structure, and was as valuable as other parts of beautiful old work in churches. He was often surprised to find a fine arch in a porch rendered unsightly by large door screens. It might be good business for the iron merchant, but to him it was tragic to see those cast iron and wire abominations added to some fine specimen of architecture.

Describing Barnack Church with the aid of lantern slides, Mr. Traylen said that in one simple village church they had illustrations of all the important periods of architecture from Saxon times to the fifteenth century.

In answer to a questioner, who suggested that the removal of plaster enabled them to discover many important things,

Mr. Traylen said that a well-known archaeologist had compared the stonework of a church to a skeleton and plaster to the flesh, and therefore in destroying the plaster they were merely leaving the skeleton of the former beauty of the church.

The chairman (Mr. Mitchell Withers) said he did not see any objection to removing plaster which was more recent than the stonework of the church. Mr. Mitchell thus met the point raised in the preceding paragraph; for there can be no question that much beautiful work that was meant to be exposed has been covered over with plaster, the removal of which is therefore justified.

MODERN FRENCH SCULPTURE.

On Friday, December 6th, at the Lecture Hall, Wimbledon, Mr. H. Heathcote Statham, F.R.I.B.A., gave a lecture on "Modern French Sculpture." For a quarter of a century, he said, he had studied the sculpture at the annual Paris Salon, where nearly a thousand works in sculpture were exhibited every year, many of them of the highest interest and significance, but mostly quite unknown on this side of the Channel, where people seemed to think there was no French sculptor but M. Rodin. Sculpture, though dealing with complete form in the round, while painting only dealt with form projected on a plane surface, was not a realistic but an abstract art, dealing with types and not with accidents of life, and more especially with the idealised nude figure, as the highest and most expressive form in creation, which could be used (as French sculptors constantly did use it) as the expression of an intellectual idea. Among sculptors of the modern period now dead, examples were shown of the works of Carpeaux, Barye (the Michelangelo of animal sculpture), Chapu, Dalon, Falguière, Maturin-Moreau, and others. Among living sculptors the first place might be given to M. Mercié, a sculptor of wonderful versatility, who had succeeded in every class of subject; special mention was made of his noble work, "Gloria Victis," in a small courtyard in the Hôtel de Ville at Paris. Among other sculptors prominently illustrated were MM. Gustave Michel, Alfred Boucher, Jean-Boucher, (whose "Antique et Moderne" was one of the finest examples of intellectual symbolism in sculpture), Hugues, Denys Puech, Marqueste, Bartholomé, Rodin (who owed a good deal of his popularity to the clamour that was raised over his *ébauche* of Balzac), and a good many others; and a number of examples were shown of the French method of treating memorial sculpture, by giving a bust portrait only, accompanied by symbolical figures. English sculptors would like to do the same, but the British public would not let them; it must have the man in his boots, trousers, coat, and necktie.

The best English sculpture was now little inferior to the best French work, but there was much less of it, for want of public encouragement and opportunity. At the Salon one might see fifteen or twenty sculptures with the label "Purchased by the State," but we never heard of such a thing in England. There was plenty of sculptural genius in England; it rested with the public and the Government to give it opportunity for development.

The lecture was illustrated by about 140 lantern slides, nearly all from photographs specially lent by leading French sculptors.

NEWS ITEMS.

A New Liverpool Church.

A new church of St. Barnabas is being erected on a site at the junction of Allerton Road and Penny Lane, Liverpool, from designs by Mr. T. Francis Doyle.

Change of Title.

The title of the firm of "John Tann," the well-known safe and strong-room engineers, has been altered to "John Tann, Ltd.," the firm having been registered as a limited company on December 2nd.

The Guildhall Rebuilding Scheme.

The question of rebuilding the eastern block of offices abutting on the Guildhall Yard to provide a picture gallery and new offices for the Guildhall Courts has been deferred for twelve months.

Hospital Ventilation.

The extensions to the Bucknall Isolation Hospital are being supplied with Shorland's warm-air ventilating Manchester grates and exhaust roof and inlet ventilators by Messrs. E. H. Shorland and Brother, Ltd., of Failsworth, Manchester.

An Advertisement Correction.

Messrs. E. Pollard and Co., Ltd., ask us to correct two small errors which appeared in their advertisement in our issue for last week. The telephone number should have been City 3980 (three lines), and the name of the architects under the illustration (given as Jones and Morgan) should have been James and Morgan.

Carpenters' Company Lectures.

The Carpenters' Company has just issued particulars of a course of lectures to be delivered in their hall on the arts connected with building. The names of the lecturers are a sufficient guarantee for their excellence, and the whole series is extremely interesting. The first lecture will be given on January 8th next, at 7.45 p.m., by Sir Alfred East, R.A., the subject being "The Value of Colour to the Crafts."

Chinese Building Trade Workers in India.

In his report on the architectural work done in India during 1911-1912, Mr. John Begg, F.R.I.B.A., Consulting Architect to the Government of India, refers with regret to the capture of certain of the building trades of Bengal by the Chinese. "It is hard to think how this can be changed, but everyone who would see the crafts of India on a sound footing must wish it to be changed. They are fine workmen, these Chinese, but it is difficult to see that their presence is not helping to drive more nails into the coffin of Indian craftsmanship."

Royal Academy Prizes.

The annual distribution of prizes to the students of the Royal Academy Schools took place on Wednesday evening last. Among the principal awards were the following: Creswick Prize (£25) and silver medal, Evelyn Muriel Young; design for the decoration of a portion of a public building, first prize (£30) and silver medal, J. Williams; Armitage Prize (£30) and silver medal, H. E. Quick; model of a design, first prize (£30) and silver medal, A. H. Wilkinson; design in architecture, travelling studentship (England), £60, tenable for one year, O. F. Savege. Landseer

scholarships of £40 a year each, tenable for two years, were awarded, in painting, to H. E. Quick and D. S. Gray, and in sculpture to A. Stiles and A. E. Howes.

Reliable Roofing Tiles.

In the manufacture of roofing tiles, it is essential that clay or marl should be used that will withstand the weather at all times and so be proof against flaking and deterioration—particularly in such a variable climate as that of England. In this connection the Brick and Tile Workers, Ltd., have been fortunate in securing one of the richest marls in Staffordshire, their productions not only standing varied weather, but also giving a pleasing colour when on the roof. This organisation, which has its works at Madeley, has a London agency at 6, Bloomsbury Square, London, W.C., and has done a good deal of work for the various garden suburbs throughout the country.

The India Museum.

The President of the Board of Education, Mr. J. A. Pease, M.P., who was accompanied by Earl Beauchamp (First Commissioner of Works), received a deputation last week on the question of the future of the collection of Indian objects of art and science now housed in the South Kensington Museum, the object being to urge that better accommodation be found for them. Mr. Pease, while expressing the sympathy of the Cabinet, said that the only site available near the Victoria and Albert Museum had been given over to the Royal College of Art, and the question of providing a new home for the Indian collection must be postponed until London University had decided whether they would leave the Imperial Institute.

Suggested Southern Embankment.

Mr. Walter Reynolds has given notice of his intention to move, at the next meeting of the London County Council, "That it be referred to the Improvements Committee to consider and report as to the desirability of the council undertaking the construction on the south side of the Thames from the new St. Paul's Bridge to Westminster Bridge of a new road providing better approaches to Westminster Bridge and adequate approaches to the new St. Paul's Bridge, such road to be laid out in part as a garden promenade and to be completed as an embankment to the river front parallel with and a counterpart of the Victoria Embankment on the north side of the river; and that in view of the special advantages of such an improvement in relation to the needs of the general traffic and amenities of London, the committee do advise as to whether the Road Board should be invited to co-operate in the undertaking."

Widening of Cheapside.

At last week's meeting of the Court of Common Council the question of the rebuilding of the old General Post Office and the improvements at the top of Cheapside came under consideration. On October 14th the Court agreed to widen St. Martin's-le-Grand to 80 ft. A letter from the Postmaster-General was now submitted desiring to know whether the present proposals were complete or whether further improvements in the vicinity were probable. The committee reported that they had given the matter careful consideration, and were unable to recommend the making of the new street suggested by the London Society. At the same time they were of opinion that some further improvements

were urgently necessary, and that the western end of Cheapside should be widened by an additional 15 ft. Therefore the committee recommended that, in addition to the widening of St. Martin's-le-Grand, already settled in principle, Cheapside should be made 95 ft. wide at Sweeting's corner, in accordance with a plan submitted. It was pointed out that this arrangement would be subject to the London County Council agreeing to contribute one-half of the net cost of the work.

Heating and Ventilating Studentships.

The Institution of Heating and Ventilating Engineers offer two Heating Studentships, tenable in the Faculty of Engineering at University College, London, each of the value of £50 a year, together with eleven guineas for payment of college fees. The object of these studentships is to encourage research in heating and ventilating engineering. There is no limitation regarding the age of candidates, nor any restriction as to previous places of education; but candidates must produce evidence that they have already pursued a course of engineering training and are familiar with the work of an engineering laboratory. The studentships will be awarded for one year, and, subject to the work of the students being satisfactory, they are renewable for a second, and, in exceptional circumstances, for a third year. Full particulars may be obtained from the secretary, University College, London, to whom applications should be sent before December 7th.

OUR PLATE.

As the Centre Plate in this issue we reproduce a photograph of Mr. Pierpont Morgan's library in New York—an admirable example of the work of Messrs. McKim, Mead, and White. A plan of the building and some interior views were published in our issue for September 6th, 1911.

OBITUARY.

Mr. E. B. I'Anson.

The late Mr. E. B. I'Anson, M.A., F.R.I.B.A., left estate which has been proved at £87,194 gross.

TRADE AND CRAFT.

New Catalogue of Bush Fires.

A neat illustrated catalogue, comprising eighty new designs in "Bush" fires, has recently been issued by the Nautilus Fire Co., Ltd., of 215, Tottenham Court Road, London. The "Bush" fire is of remarkably simple construction, the component parts consisting of either a plain or ornamental frame in cast-iron, brass, or copper (with or without a canopy), a loose front fitted with an ashpan, and a ventilator for controlling combustion. The "Bush" fire, which has no firebars, is designed so as to secure the maximum of efficiency with economical coal consumption. The fire rests on an "island" brick, entirely surrounded by a cast-iron grating, which supplies air to the outside wall of the fire, leaving the hearth free from draught, slow combustion thus being ensured. All the designs in the catalogue are in excellent taste, a number of them showing the fire complete with overmantel.

Supplement to THE ARCHITECTS' AND BUILDERS' JOURNAL, Wednesday, December 18th, 1912.



MR. PIERPONT MORGAN'S LIBRARY, EAST THIRTY-SIXTH ST



T, NEW YORK. McKIM, MEAD AND WHITE, ARCHITECTS.

THE ARCHITECTS' & BUILDERS' JOURNAL.

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No. 13.



(From Piranesi.)



THE STAIRCASE HALL, ASHBURNHAM HOUSE, WESTMINSTER: ATTRIBUTED TO INIGO JONES.

THE ARCHITECTS' & BUILDERS' JOURNAL.

DECEMBER 25th, 1912.

CAXTON HOUSE, WESTMINSTER.

VOLUME 36. No. 936.

The Legal Meaning of the Term "Building."

WHILE the builder or the architect may not often be directly concerned with the law relating to building contracts, there are certain branches of local government law with which he must make himself familiar. Thus he or his principal may incur serious liability for non-observance of building by-laws. One case is sufficient to illustrate this, namely *James v. Masters* (1893), I.O.B.355. In that case the defendant gave notice to an urban sanitary authority of his intention to build, and sent in plans which were approved. In carrying out the works he made substantial alterations in the plans, but not so as to contravene any of the by-laws. By the by-laws of the authority, plans showing the position, form, and dimensions of the several parts of the building had to be deposited, and power was given to pull down work done in contravention of any by-law; but there was no by-law prohibiting building contrary to deposited plans. Masters was summoned for erecting a building without depositing plans in accordance with the by-laws. It was held that as the erection of the building was not proceeding in accordance with the deposited plans, he was bound to send in fresh plans, and, not having done so, was liable to be convicted.

The following question arises with greatest frequency in relation to local by-laws: "Is this or that structure a building to which by-laws made under the Public Health Act apply?"

The term "building" or "new building" is to be found in s. 157 (2) of the Public Health Act, 1875. That section enables an urban authority to make by-laws as to "the structure of walls, foundations, roofs, and chimneys of new buildings for securing stability and the prevention of fires, and for purposes of health." The phrase "erection of a new building" is defined in s. 159 of the same Act, which provides that the re-erection of a building pulled down, or the conversion of a building into a dwelling-house, or the conversion of a dwelling-house into one or more dwelling-houses, is to be considered as the erection of a new building.

The meaning of s. 159 is: "That if the magistrates ever come to a state of facts in which any one of these descriptions is fulfilled, then, as a matter of law, they are bound to find that there has been an erection of a new building within the Act, but it by no means deprives the magistrates of the right nor relieves them from the responsibility of saying whether or not what has been done is the erection of a new building (*Redruth Brewery Co. v. Redruth District Council*, 1904, 69.J.P.78.).

The question whether a building is a "new building" is one of fact for the Courts to decide in each case. (*James v. Wyrill*, 1884, 48.J.P.725.)

As Lord Coleridge, C.J., said in that case: "If a building were nearly all taken away and then rebuilt, it clearly would be a new building; on the other hand, it is quite clear that by a small addition of, say, a door, the building would not thereby become a new building.

Between these two extremes there may be thousands of cases."

The Court will also have regard to the question whether it is fitted with artificial heating, and the permanent supplies of the district, such as gas and water.

The question whether the structure has a roof capable of affording protection or shelter is a matter which will also be taken into consideration.

The following structures have been held to be buildings: A house resting on the surface of the ground without any foundations; an open shop roofed in which connected the shop front with a newly built house; a stone structure having four walls and a door which was used for keeping guano and other manures; a wooden shop of considerable size likely to last for some time, resting on joists, but having no fastenings or foundations in masonry, but capable of being lifted from the ground; and an ordinary lock-up shop and a wooden structure 20 ft. each way and at the apex of a slanting roof 12 ft. high, in the centre of an acre of ground—to which the public had no access, part of which was used by the respondents as a builder's yard, the structure being used as a stable.

Coming next to the phrase "new building," the following have been held to come within the legal definition of this term: An old railway carriage converted by structural alteration into a dwelling-house; alterations which might upon one view of the facts be construed to be necessary amendments to formerly existing buildings; a stable-yard pulled down and re-erected of smaller dimensions, and a little higher in another part of the same yard, the old materials, with some addition, and the boundary walls of the yard being made use of in such re-erection; an erection of wood, 30 ft. long by 13 ft. wide, brought on wheels and put at the corner of a new street, having spouts and a down corner, a supply of gas, and used as a butcher's shop; and, finally, a mere cover or shelter, or pavilion for refreshment.

The following have been held not to be new buildings: A permanent wooden structure 10 ft. by 7 ft., with a height of 10 ft., as a shelter for a large weighing machine on an esplanade, where the public stopped for the purpose of using the weighing machine; a conservatory, 15 ft. long and 9 ft. deep, made of wood and glass, and built against the sides of a house, was held not to be within a by-law relating to the construction of walls of new buildings; and a wooden shelter (renewed each year), measuring 9 ft. 3 in. by 6 ft. 11 in., with a height of 7 ft. 5 in. to shelter a counter on which tea, coffee, and light refreshments were sold on an esplanade.

For the sake of simplicity the references to the law reports containing the cases in which these various principles were laid down have been omitted.

Although the important question "building or not" is one of fact to be decided in each case, the cases above quoted will be of assistance to architects and builders who have any doubts about the character of a structure which they propose to erect. W. V. B.

King Edward Memorial.

THE suggestion which has been made by His Majesty the King in regard to the site for the King Edward Memorial is, we think, an excellent one. Everybody now admits that the Green Park site was by no means an ideal one. The Memorial would there have been unhappily placed, more especially on account of the disturbing surroundings. The position now proposed—one that has every likelihood of being adopted—is in the space between Pall Mall and the Duke of York's Column. There is one matter, however, which, if this site is adopted, will certainly have to be altered. In the middle of the space is now an equestrian monument to Lord Napier—a monument which, by the way, embodies a treatment that has very rightly been criticised as wrong, namely, the treatment of the base on top of the pedestal as rising ground. It is obvious that there could not be two memorials here, and if the King Edward Memorial is to be set up in this position the Napier Monument will have to be removed. There is a vacant pedestal in Trafalgar Square, and it might very well be put there.

Of course, now that the King has expressed his wish for the memorial to be an equestrian one, the scheme already prepared by Mr. Lutyens and Mr. Mackennal—the selected architect and sculptor respectively for the memorial—will have to be set aside. In the new design we hope that the figure of King Edward on horseback will be made entirely dominant, and whatever symbolical figures of Peace, etc., it may be desired to incorporate, kept altogether subsidiary. We have always thought that in the Queen Victoria Memorial there are too many subsidiary figures competing with the main one.

District Surveyors' Fees.

YET another case of the disputed claims of a district surveyor draws attention to the necessity for setting this matter on a sounder and more equitable basis. Mr. Percy Hunter, district surveyor for South Lambeth, summoned Messrs. F. and H. F. Higgs, of Brixton, for the recovery of £22 16s. 3d. as fees in respect of building works carried out at the Bon Marché, Brixton; the contention of the district surveyor being that he was entitled to charge fees under the Act of 1894 as well as the fees chargeable under the Act of 1905. The magistrate refused to make an order on the summons, and costs against the district surveyor were granted. This case is typical of many that have occurred since the 1905 Act was passed; and the ambiguous position in which that Act places both builder and district surveyor has become intolerable to the former and by no means pleasant for the latter, especially when he is defeated on the issue. A readjustment of the incidence of fees, so that what is and what is not due to a district surveyor may be determined without perpetually resorting to the courts, has become imperative; and when the subject is under revision drastic reform of the whole system should be insisted upon. The brilliant notion of making a surveyor dependent on his fees as the sole pecuniary reward of his vigilance is played out. It may add a zest to his diligence, but it places him in a false position. Whether or not he is avid of fees—and the degree of his keenness depends on varying personal proclivity—he is always more or less open to the suspicion of sordid self-interest, and this suspicion may in some instances be grossly unfair to him. In any case it does not increase the builder's or the building owner's respect for him; and resistance to his demands would be much less frequent if it were known that they were entirely detached from a direct monetary objective. Payment by results has failed lamentably in other directions, and there is no adequate reason why so inherently vicious a system should be allowed to persist with regard to district surveyors. We go even further

than the demand that the district surveyor or building inspector should be invested with the dignity and impartiality of a disinterested official by paying him a stated salary. We claim that as the inspection of buildings is made purely in the public interest, the public ought to pay for it. If a builder fails in his duty to the public, by all means let him smart for it; but to exact fees from him for mere ascertainment that he has complied with the restrictions imposed upon him is an absolutely absurd convention which ought to be abolished.

The New Government Building for Edinburgh.

AN important scheme for the provision of Government offices in Edinburgh will have the effect of altering one of the prominent features which appear in many well-known pictures of "The Modern Athens," as viewed from the Calton Hill. The stern and gloomy castellated prison built (1807-12) on the edge of the rock which descends to the valley where "the Physic Gardens" once flourished, and through which the North British Railway line now runs, is to make way for a modern building suitable for office accommodation. There are already blocks of buildings (west of the Calton Prison) which house the Inland Revenue officials.

The project has given rise to a number of questions in the House of Commons, which, however, all showed concern for the manner of providing the new buildings rather than regret for the threatened disappearance of the old. For example, Mr. Hogge, who represents the constituency in which the prison is situated, betrayed no anxiety for its preservation, but wanted to know whether designs for the new offices would be obtained by competition among Scottish architects. Questions put by Mr. A. F. Whyte were of similar import; while Lord Balcarras was naturally curious as to the precise functions of the "independent architect of high standing" who, Mr. Wedgwood Benn had explained, would be called upon to advise the Office of Works, which has been entrusted with the design of the buildings; "a small committee of members of Parliament" having decided against an open competition.

Heckled on these points, Mr. Benn adopted the feeble evasion, "That is a matter of opinion." He was hardly happier in his matters of fact, although these revelations as to the hole-and-corner manner in which such schemes are engineered are valuable as confirming one's general impression that the First Commissioner of Works is the heir of bad old traditions. To refer great matters to small committees may be lawful and even expedient in everyday affairs; but in the present instance the small committee, although it may have consisted of competent authorities, was more probably the customary casual collection of irresponsible M.P.'s, blankly ignorant of the subject in hand; and in the present instance the decision does not serve even the poor purpose of affording cover for a harassed Minister at question-time. At all events, the small committee arrived at the wrong conclusion. With or without the revision of an independent architect of high standing, Office of Works architecture for an important Government building is undesirable; but the procedure sketched by Mr. Benn, of a small committee to save the face of the First Commissioner of Works, and an independent architect of high standing to save the face of the small committee, is simply farcical. Politically, this may be very good tactics; but æsthetically the absurdity of the position emphasises the contentions we have so often held, that political expediency is one of the deadliest foes of art, and that official architecture comes perforce into the same category. We whole-heartedly support the demand of the Scottish members that the new Government buildings for Edinburgh should be the subject of competition; and we add the further recommendation that an assessor shall be appointed by the Royal Institute in the usual way.

RICHMOND BRIDGE.

THE fate of Richmond Bridge is still undetermined.

At a meeting which, although public, may nevertheless be regarded as quasi-official, as the Mayor of Richmond, who presided, was supported by the chairman of Twickenham District Council, by representatives of the Surrey and Middlesex County Councils, and by others holding positions of local importance, the resolutions passed left as an open question the course to be taken in meeting the acknowledged need for better traffic facilities. These resolutions were to the effect that, in the interests of public safety, a new bridge should be built or the existing bridge widened and the sharpness of the gradients thereto lessened; and that assistance should be sought from the Road Board.

The terms of these purely utilitarian resolutions do not show much regard for the important æsthetic questions involved. They seem, indeed, to suggest that the existing bridge is either to be altered or superseded. Either expedient would be lamentable in its effects. It would be almost impossible to alter the bridge without destroying its character; and its demolition to make room for a new bridge would be a deplorable sacrifice of a structure that, by its pleasing appearance and its interesting associations, deserves a better fate. It is therefore suggested that both the utilitarian and the æsthetic demand may be satisfied by building a new bridge, adequate in capacity and of architectural design, without interfering with the existing bridge in any way except by relieving it of its excess of traffic.

Richmond Bridge belongs to the latter part of the eighteenth century, having been erected in 1774-1777 from designs by James Paine and Couse. It comprises five arches—a central one of 60 feet span, and two smaller spans on either side—and is built of ashlar, now weathered to a white that dazzles in the sunshine. Maurice, long since, wrote about it in his grandiose manner, with all the elegant phrases of his day, not omitting such poetical extravagances as cars of luxury

that went over the bridge "glittering with brilliant tints and burnished gold" and the "thousand barks" below "array'd in gorgeous pride"; but from the architectural standpoint it must be admitted that he was giving expression to a very just estimate of the structure when he wrote:

"There, Attic elegance and strength unite,
And fair proportion's charms the eye delight;
There, graceful, while the spacious arches bend,
No useless, glaring ornaments offend."

It appears from records that for upwards of three centuries a ferry existed across the Thames where Richmond Bridge now stands. This ferry was held on a Crown lease, and at the time when the proposal to build a bridge was mooted the then proprietor of the ferry offered to sell his right to the Commissioners for £6,000, or an annuity of £200; in the former case undertaking to bear the whole expense of building a bridge. The structure he proposed, however, was a wooden structure; and for this reason, as well as the knowledge that he would be holding a monopoly over all traffic across the bridge, with charges imposed accordingly, the inhabitants of the town made strong protests. At that time there were three schemes put forward. First the one mentioned above, secondly a scheme for a bridge a little lower down, and thirdly one for a bridge still further down, in line with a narrow little street called Water Lane (still existing). In the end, the ferry proprietor's proposal for a wooden bridge was quashed; but it was at this point across the river that the new stone bridge was constructed; a mistake which cannot now be rectified except at very great expense, but one which should never have been made, and one moreover, which, if there had been any such considerations of town planning as now prevail, would never have been permitted to pass; for the main street of Richmond is George Street, and the narrow little thoroughfare called Water Lane, leading to the river, is axially in line with it. At this point, there-



THE BRIDGE OVER THE THAMES AT RICHMOND.

JAMES PAINE AND COUSE, ARCHITECTS, 1774-1777.

fore, the bridge should have been built; instead of which the present road beyond George Street turns sharply to the left up the hill, and then there is a steep descent to the bridge; whereas at Water Lane the roadway would have been taken across level. These very deficiencies were in the minds of the inhabitants of the town at the time, and are actually expressed in a report which was drawn up; but for some reason or other the existing position of the bridge was adopted. Opposite Water Lane was the estate of Twickenham Farm, the owner of which objected to any bridge being taken across here, though his house was half a mile away. And that perhaps explains why the bridge was not built at the best place.

The cost of the bridge was £20,000, the bulk of which sum was raised in "Tontine shares"—£100 shares in the form of annuities according to a scheme evolved by an Italian named Tonti. To defray the cost, tolls were in force, and there were small toll-houses at each end of the bridge. In 1822 the tolls

presented. It can never be solved satisfactorily, but Paine made a very good attempt in Richmond Bridge.

James Paine, it may be added, was born in 1725 and died in 1789. He had a very extensive architectural practice, and in addition to numerous houses for the nobility in town and country he designed bridges at Chertsey, Walton, Kew, Chatsworth, Chillington, and Richmond. Gwilt, in his memoir of Sir William Chambers, says that "Paine and Sir Robert Taylor divided the practice of the profession between them until Robert Adam entered the list and distinguished himself by the superiority of his taste in the nicer and more delicate parts of decoration."

Paine was Clerk of Works (resident architect) at Greenwich Hospital, and afterwards held a similar post at Richmond New Park and Newmarket. He was finally attached to the Board of Works as "architect to the King," but was displaced in 1782, very soon after his appointment, by Burke's Reform Bill, without gratuity or pension.



RICHMOND BRIDGE: DETAIL OF PARAPET.

were reduced (being then one penny per person), and when the last survivor of the first tontine died in 1859 the bridge was thrown open free and the toll-houses and gates were removed. At a later date, 1868, the present cast-iron lamp standards and the seats in the recesses on either side were fixed, and in regarding them one is surprised to note such good taste displayed at a period when the influences of the Great Exhibition were so fresh and vigorous.

The proportions of Richmond Bridge are very pleasing and the balustrades excellent, though the old difficulty associated with a raking cornice is once again

In 1764 he was living in a spacious house which he had built for himself in St. Martin's Lane. Two years later he removed to Salisbury Street, and about 1785 went to Addlestone or Sayes Court, near Chertsey. In 1783 he was High Sheriff for Surrey, and in the commission of the peace for Essex, Middlesex, and Surrey. Some months before his death he retired to France, where he died in his seventy-third year.

He had a son named James, also an architect, but there are very few buildings to his account; which perhaps is the corollary to the fact that he was left well off by his father.

ST. PAUL'S AND THE TRAM SUBWAY.

A CONFERENCE between representatives of the London County Council and of the Dean and Chapter of St. Paul's Cathedral was held on December 17 to discuss the possibility of withdrawing from the Council's Bill (recently presented to Parliament) the clause which proposes to construct a tramway subway under St. Paul's Churchyard. Mr. Philip E. Pilditch, chairman of the Parliamentary Committee, and Mr. W. J. Squires, chairman of the Highways Committee, represented the Council, and Canon Alexander and Mr. Mervyn Macartney the Cathedral authorities. The general position was discussed, but no definite decision was arrived at, as it was felt that there was sufficient time for the Council to go into the matter in more detail after the Christmas recess. The Council's Bill cannot come before Parliament until February or March.

Writing to the "Times" on the subject, Mr. W. H. Booth, of London, E.C., says: "The question of the proposed subway near St. Paul's appears to be one of foundation stability. It has been stated that the Cathedral foundation is 5 ft. lower than the bottom of the proposed subway, and this is assumed to secure safety because the line of pressure of the foundation is not in the air. In a more or less plastic material like London clay there is really no permanent angle of repose, and a bank of clay unsupported laterally will flatten gradually to the horizontal. The question thus resolves itself into whether a depth of 5 ft. of earth is sufficient by its vertical pressure to counteract the lateral thrust of a 5 ft. bank of clay loaded with the heavy weight of the Cathedral wall. The steady, long-continued lateral thrust helped by the vibration of street traffic might perhaps be calculated to show that the subway bottom would be thrust upwards, being insufficiently heavy. Where there is doubt on such a possible contingency this could be replaced by certainty if the buildings on both sides of a street could be carried on the ends of strong girders laid across the intervening space, the girders carrying also all the weight of the subway and its heavy concrete bed. Thus the weight of the threatened buildings is partially added as a load to the holding down effect of the street area by subtracting something from the foundation pressure which tends to lift the street area. The Cathedral can be made safe by expenditure on a sound engineering substructure. But with only 5 ft. of overload doubts may very legitimately be expressed as to the remnant of safety left after removal of so large an amount of street loading."

A Correction.

We regret that in our article last week certain remarks made by Canon Alexander with respect to the negotiations between the Cathedral authorities and the Corporation were inadvertently attributed to Canon Masterman.

"SPECIFICATION" NO. 15.

PROFESSIONAL men and practical builders will be glad to know that a new edition of "Specification" is now in the press for immediate publication. This will be the fifteenth issue, and it comprises not only the mass of valuable information that has won for it a unique position as the standard authority on all that pertains to the profession and practice of building, but, in addition, an important series of special articles on subjects of practical interest. Mr. Paul Ogden, F.R.I.B.A., contributes some pithy observations on the responsibility for dry-rot. Mr. W. Valentine Ball, M.A., barrister-at-law, deals luminously with specifications in their legal aspects. Mr.

G. Metson, M.R.S.I., takes up the hitherto neglected subject of specification for the demolition of buildings. Mr. T. Millwood Wilson, the architect of several houses at the Hampstead Garden Suburb, gives notes, full specification, and plans, elevations, and sections, of this popular type of domestic work. Mr. A. G. White, secretary of the National Federation of Building Trades Employers, collects and summarises the views of leading contractors with respect to certain matters in which it is assumed that there is room for reform in the drafting of architects' and engineers' specifications. Mr. H. V. M. Emerson, A.R.I.B.A., discusses, on the comparative method, the various means of lighting country houses. Mr. W. H. Maxwell, A.M.I.C.E., reviews the present position of municipal engineering, and has also an important article on the current topic of interceptor traps in house drainage. In a thoroughly practical illustrated article on "Safes and Strong Rooms," a specialist of acknowledged eminence makes clear, for the first time, the essential requirements in such structures; and there are many other new articles—on Landscape Gardening, Isolation Hospitals, Petrol Gas, Water Supply, Sewage Purification, and other subjects, rendering "Specification" No. 15 probably the most interesting as well as the most valuable issue of the series. The various sections of the work have been brought up to date, and in some instances entirely re-written, by such eminent authorities as, to give but a few instances, Mr. Paul Waterhouse, M.A., F.R.I.B.A., Mr. H. D. Searles-Wood, F.R.I.B.A., Mr. C. F. Innocent, A.R.I.B.A., Mr. Henry Adams, M.S.A., A.M.I.C.E., Mr. R. Borlase Matthews, Wh.Ex., A.M.I.E.E., Mr. Percy J. Waldram, Mr. J. Grant Browning, A.M.Inst.C.E.; Mr. Arthur Seymour Jennings, Mr. W. J. Pearce, and many others. Orders for "Specification" No. 15 should be sent at once to Caxton House, Westminster, as there is every indication that, although a larger number than ever before is being printed, the issue will speedily run out of print.

OUR SPECIAL ISSUE.

THOSE who have not already ordered the Special Issue which we shall publish next week should do so *at once*, otherwise they may be disappointed by not being able to secure a copy. As in former issues there will be an illustrated record of the most notable buildings of the year, but the principal feature will be a series of forty plates of details of domestic work by well-known architects, including Mr. Ernest Newton, Mr. E. L. Lutyens, Mr. E. Guy Dawber, Mr. Mervyn Macartney, Mr. E. J. May, Mr. E. Turner Powell, Professor C. H. Reilly, Mr. Oswald P. Milne, Mr. Ronald P. Jones, Mr. F. S. Chesterton, Messrs. Horace Field and Simmons, Messrs. Richardson and Gill, Messrs. Geoffrey Lucas and Lodge, Mr. T. Millwood Wilson, Mr. J. M. W. Halley, Mr. Evelyn Hellicar, Messrs. Woodhouse, Corbett, and Dean, Mr. W. H. Bidlake, Mr. Percy Newton, Messrs. Nicholson and Corlette, and Messrs. W. and E. Hunt.

These forty plates have all been specially prepared from the architects' working drawings, and they give the practical details of both the design and construction; they include, also, small photographic illustrations of the executed work, thus making the representation complete. Chimney-pieces, staircases, panelling, doors, and similar interior details, are shown in this way, and, in addition, there will be a number of most useful plates of dressers, pantries, serveries, storeroom fittings, and other practical details not to be found in any other publication.

Orders should be placed either with a newsagent or direct with the Publisher, at Caxton House, Westminster.

The issue will be dated December 31st, and will be published at 1s. net (postage ½d. extra).

THE NEW DELHI.

Views of the India Society.

THE following communication on the subject of the new Delhi has been issued by the India Society:—

It has been maintained that the Government offices in the new city and the residences for Europeans should be designed by European architects. That seems to us reasonable, and we think that it is idle to discuss the style of these buildings, for that, we hold, should be the architect's concern. In saying this we take it for granted that no European architect would wish to provide buildings for India which did not imply the intelligent co-operation of Indian craftsmen. We suggest, however, that the new city will require buildings which are neither Government offices nor residences for Europeans—in this category we would include the Durbar Hall, and other structures ranging in importance from a shop to, possibly, a university—and our plea is that these—so far at least as public buildings are concerned—should be entrusted, under proper restrictions, to Indian master-builders to build in their own manner at the expense of Indian revenues.

We put forward the above plea because we wish to emphasise the claim of the art of a country to be supported and encouraged by the patronage of its rulers.

Whether Indians are capable of such work or not would depend, we imagine, largely on the extent to which they understood and sympathised with the practical requirements. Where these conditions have obtained, Indians have raised within recent times many domestic buildings (as at Muttra and in Orissa), a railway station (at Alwar), palaces (along the *ghats* at Benares and other sacred places), and Royal palaces (as now at Bikanir). There is no need, therefore, to suppose that their architectural ideas are bounded by mosques and tombs.

Some Practical Considerations.

Some very interesting practical considerations in regard to the new Delhi are contained in an article by Colonel F. Spratt Bowring, C.B., R.E., which appears in the December issue of the "Architectural Review." The following are some extracts:

Delhi is about three-quarters of the way northward of the southern extremity of India. Those who know India other than as winter visitors are aware that, north of a line drawn a little above Allahabad, distinct summer and winter conditions (or cold and hot seasons, which is the most common way of expressing it) are to be reckoned with. Delhi lies well above this line, and although these seasonal differences are not so marked as they are further north, they are in sufficient contrast to become ruling factors in the lives spent by the community living with them. A house, for instance, designed mainly for summer residence, say at Meerut, can be most uncomfortable to live in during the winter. It will be dark, cold, and draughty, while, per contra, a house that is a suitable one for the five or six months of the cold weather would be unbearable in June, July, and August.

No Government of India State functions, durbars, or big gatherings take place in the plains other than between October and April. Such as may be necessary at the other periods are held at Simla. Here, then, we have well-defined isothermal and isosocial lines which materially affect the designing of the Delhi capital, and if not taken very seriously into account will spoil the result and lead to unnecessary expense.

Here, too, is to be found, in the annual migration to the hills, the great divide and line of separation between the methods of administration under the present day British Raj and the old régime of the Mogul emperors or other native rulers. It will be well for those who are strong advocates of a replica of Indian architectural art for Delhi to ponder this, and con-

sider whether the Mahomedan, Hindoo, or any other style of native architecture can, under the circumstances, be adapted to the present order of things, when climatic environments during the period of their use differ entirely from what used to be the case.

These prevailing and fixed conditions are not likely to be reversed with improving means of communication to and from the hills, of which even the natives are availing themselves in greater numbers every year. If recognised, and due importance is given to them, the designing of the public, high official, and residential buildings for new Delhi becomes simplified and reduced to designs which would be suitable for the south of Europe in the winter, where light frosts at night and occasional mists and rain are met with, and bright sunny days, such as we may experience at home in October, are the rule.

The Ceremonial halls, the Viceregal residence, and the majority of other residences and offices, may therefore be designed internally for use in a temperate climate with architectural embellishment to correspond.

Throughout India there is one common feature to be found in all buildings, however poorly proportioned be the designing, which is the encircling verandah or façade (when worthy of such a name) to the main building, and the colonnades connecting.

A proportion of the new buildings will be in occupation throughout the year, and these will require different treatment, the architecture remaining the same. All that is necessary is to provide relatively more floor space, additional height to the rooms, larger opening for air circulation, and greater depth of verandah on the east and west. They would face north, their largest dimension east and west. As the engineer requires to determine the fixed points between which his road or rail will run, or the datum levels from which will spring the arches of his bridge, so the architect has first to know the leading factors which control his design, and then proceed to adopt the style he thinks best to fit in with them.

R.I.B.A. PROBLEMS IN DESIGN.

ON page 681 of this issue we reproduce the approved design for an art gallery by Mr. F. Jenkins—Subject V. (a). Provision was required to be made for six galleries of varying size. The drawings required were—plans, sections, and elevations to $\frac{1}{8}$ in. scale, and details (both external and internal) to $\frac{1}{2}$ in. scale.

OUR PLATE.

THE colonnade in the monumental cemetery at Genoa, which forms the subject of this week's centre plate, gives chaste architectural expression rather to the grace and dignity than to the solemnity of death. The diverse character of the statuary, however, is somewhat injurious to the harmony of the general design.

WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS.

WE illustrate as the ninth example in the above series a portion of the elevation of the new Queen Alexandra Wing of the British Home and Hospital for Incurables at Streatham, London, S.W., by Messrs. Edwin T. Hall, F.R.I.B.A., and E. Stanley Hall, M.A., A.R.I.B.A. The exterior has been designed to harmonise with the existing buildings, the walls being of red brick with stone dressings, and the roofs covered with tiles. The new wing, which is four stories in height, occupies a position at the west end, forming the third side of a quadrangle.

CORRESPONDENCE

The Editors disclaim all responsibility for the statements made or opinions expressed by correspondents.

Correspondents are asked to be brief and to write on one side only of the paper.

Pugin, Barry, and Birmingham.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—It is surprising how short our memory is for the salient facts of modern architectural history. At the outset the leader on "The Architecture of Delhi," in your issue of December 11th, I read: "It is half a century since Barry employed Pugin to dress his classic Parliament House with the romantic trimmings of a mediæval period." Half a century since—to be precise, in 1862—Pugin had been dead ten years, and Barry two; while the Houses of Parliament competition was held in 1836, though not immediately followed by building. Three-quarters of a century, therefore, would have been near the mark.

This coupling of the names of Pugin and Barry reminds me of some recent disparaging strictures in your "Here and There" column on the architectural interest of Birmingham. For here, unnoticed by "Ubique" (not quite ubiquitous this time), stands in the main street a still earlier example of the collaboration—as it is reported—of these two architects. This is King Edward's School (1833) in New Street, whose grave Tudor frontage—recalling Westminster in details—always seems to me to dignify the whole thoroughfare—in spite of its hot and glaring terracotta annexe. Besides this, there is, near the centre of the city, Pugin's Catholic Cathedral of St. Chad (about 1840), with a singularly solemn interior. There is likewise a fine church by Pearson, less far afield than the striking "Bidlake church" mentioned in your notes.

It is worthy of remark that Birmingham has had the good sense to keep out of its two main streets the intrusive and uncomely tramway, so that altogether New Street gives one the impression of being one of the most sightly and civilised-looking of provincial main thoroughfares—that is, among the great industrial centres. This was even more the case a few years ago, before the unfortunate displacement of Christchurch, at its upper end, by a block of commercial buildings—much has happened lately in the upper part of Regent Street, London. Certainly architecture that can only be seen through a network of wires supported by ungainly standards is a sheer vanity. There is, in fact, a good deal to be said for Birmingham and its externals as compared with its industrial compeers.

Manchester.

W. RANDOLPH.

The Area of a Circle.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—Mr. Marsden's difficulty, as stated in your issue of 4th inst., arises from a failure to notice that the "quantity surveyors' method," quoted by Mr. Adams and Mr. Wilkinson, is a duodecimal one. The effect of multiplying the superficial dimension of diameter, squared by "0 ft. 9¹/₂ in." is equivalent to multiplying it by $\frac{9 \cdot 42}{12}$, viz., by .7854, viz., the area of a circle is

$$d^2 \times .7854 \text{ or } 4 \times .7854 \times r^2 = 3 \cdot 1416 \times r^2 = \pi r^2$$

London, W.C.

T. HILTON WORNUM.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—In reply to the letter of Mr. R. E. Marsden, I quite agree with him that square units multiplied by linear units give cubic units, but the 0 ft. 9 5-12 in. referred to in the method used by certain quantity sur-

veyors is, in reality, a ratio and not a lineal dimension—else, how could it be approximately equal to .7854?

If 9 5-12 in. be divided by 1 ft. the result is approximately $\frac{\pi}{4}$, and this is certainly not a lineal dimension.

The 9 5-12 in. is not shown on the dimension sheet, so there is no likelihood of confusion in the units when the abstract is being prepared.

H. F. WILKINSON.

Tottenham Polytechnic, London, N.E.

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—With reference to the above, I find the most convenient method for builders' quantities is to square the diameter and multiply by the approximate factor 11-14 (in the "times" column), so that such an item appears on my dimension-sheet thus—

$$\begin{array}{r} 11 \quad 10 \cdot 0 \\ 14 \quad 10 \cdot 0 \quad 78 \cdot 7 \end{array} \text{ Circular panel in ceiling, etc.}$$

For a semi-circle or semi-ellipse, however, I take span by height (to save the halving in the "times" column), and if there is a deduction for the head of an opening I insert the thickness of the wall as the second dimension, thus—

$$\begin{array}{r} 11 \quad 10 \cdot 0 \\ 14 \quad 9 \end{array} \quad \begin{array}{r} 5 \cdot 0 \quad 29 \cdot 6 \end{array} \text{ Ddt. semi-head, etc.}$$

For the circumference of a circle I use in the same way the factor 3 1-7 in., as—

$$3 \text{ 1-7} \quad 10 \cdot 0 = 31 \cdot 5 \text{ Fair circ. cutting to bull's-eye, etc.}$$

It will be noticed also that I use the sign = opposite a lineal dimension in preference to under-scoring it, as this is much neater and quite as effective.

For quick mental calculation of the area of a circle I evolved the following little formula many years ago, and teach it to all my students:—Square the diameter, multiply by $\frac{3}{4}$, and add $\frac{1}{20}$ of the result. For example: $10 \times 10 = 100$, $100 \times \frac{3}{4} = 75$, $75 + \frac{75}{20} = 75 \frac{3}{4} = 78 \frac{3}{4}$, which, compared with the orthodox factor of .7854, gives a difference of only 1 in 374, or about $\frac{1}{4}$ per cent.; whilst the method is both quicker and less liable to error in calculation.

RICHARD COULSON, F.S.I.

Head of Building Trades Department,

City of Dublin Technical Schools.

"Comparative Costs of Various Methods of Construction."

To the Editor of THE ARCHITECTS' AND BUILDERS' JOURNAL.

SIR,—I duly observed Mr. W. J. Swain's letter, in your issue of November 27th, regarding my paper on the above subject, but have not been able to reply to it sooner.

Your correspondent asserts that, because figures as to the costs of material and labour are not given, the various estimates are useless. In this I think he is entirely wrong. He ignores the fact that most architects and surveyors base their costs on schedules of quantities and the prices contained therein, and rightly so. Average current prices by reliable builders are the results of investigations, by men of experience, into the costs of material and labour, plus allowances for carriage, oncost, profit, etc., and may with certainty be taken as the basis of cost for any work which is to be let out to contractors. Does Mr. Swain think that an architect should be as competent as a builder to say how many bricks, how much lime and sand, how many hours of men's time, and what proportion of cost of plant, etc., are required to build a given quantity of brick walling?

Your correspondent asks, "Who would think of building a 2 ft. thick rubble wall, and then having to plug, batten, lath, and plaster it on the inside?" and

adds that "an 18 in. brick wall is of no value if it also has to be treated in the same way to keep out damp. He questions the accuracy of the prices given for the various types of walling and floors, etc. Further on in his letter he expresses the opinion that one should make a special study of the cost and strength of building materials easily procurable in the district in which one is employed.

Now, sir, the article in question, as stated in the footnote, was the substance of a paper read before the Glasgow Royal Technical College Architectural Craftsmen's Society, and your correspondent must have omitted to read the concluding paragraph, which states " . . . with regard to the various comparisons of cost, that the conclusions arrived at are all based on local prices, and are subject to modifications in districts where affected by freights and cartage, plentifulness or scarcity of the materials involved, and other considerations." Notwithstanding this, Mr. Swain presumes to call into question costs and methods of construction in a district of which his letter shows a pardonable ignorance. It will no doubt be news to him that the Glasgow Building Regulations Act enforces the strapping and lathing of the internal face of all outer walls of dwelling-houses, etc., which he so hastily ridicules, and that, without such enforcement, public opinion would insist on its being done to prevent the intrusion of damp which so often pervades the atmosphere of our northern climate.

I may say that the costs given are based on fair current rates for first-class work in Glasgow, and are not likely to be questioned by anyone familiar with the details of building work as practised in this district, though your correspondent seems to think they are very high rates. Judging from his prime cost sum of £89 14s. 11½d. for a concrete cottage of living room, three bedrooms, etc., which sum, to architects here, is absolutely unthinkable, I cannot help concluding that in making his criticism he was unduly obsessed with the idea of cheapness in cottage construction. Much credit is certainly due to him for his success in reducing the cost to this extremely low figure which the thrifty working man might reasonably be able to pay for a dwelling of his own. But, unfortunately, in this district, under the existing building regulations, it could not possibly be done for less than double that amount.

ALEX. H. PURDIE, I.M.

Glasgow.

MODERN SMALL HOUSES.

ON page 683 we illustrate a house at Hale, Cheshire, erected from designs by Mr. Frank B. Dunkerley, F.R.I.B.A., of Manchester. The house has a southerly aspect, and is built of brick (the facings being 2 in. sand-lime bricks with white mortar joints), the upper portion being tile-hung and the roofs also covered with tiles. The cost of the house was very low—only about £1,100.

MR. NORMAN SHAW'S ESTATE.

MR. NORMAN SHAW, R.A., the well-known architect, who died on November 17, aged eighty-one, left estate which has been proved at £104,627, of which £99,641 is net personalty. He bequeathed £300 and his household effects to his wife, and during her widowhood the use of his residence. Of the residue he left one-seventh each to his sons Robert Norman and William Campbell Shaw, one-seventh in trust for his daughter Elizabeth Helen Shaw, for life, and then for his two sons, and four-sevenths in trust to pay the income thereof to Mrs. Shaw during widowhood, or from £10,000 should she again marry, and subject thereto for his two sons.

SCULPTURE ADDITIONS TO SOUTH KENSINGTON.

AMONG the recent acquisitions of the Department of Architecture and Sculpture in the Victoria and Albert Museum the following, which have lately been placed on exhibition, are of particular interest:—

A recumbent effigy of a knight in Reigate stone, painted, gilt, and decorated with gesso, was purchased from the Lesnes Abbey Excavation Committee of the Woolwich Archæological Society with the consent of the Governors of Christ's Hospital, the owners of the freehold. This figure, which may be identified as commemorating a knight of the De Lucy family, is an admirable example of an English monumental effigy of the London school, dating from about 1320-1340; the head is unfortunately missing, but the rest of the figure is well preserved, and the remains of colour are extraordinarily brilliant. Such monumental effigies are of great importance, for they represent the direction in which English mediæval sculptors may be admitted to have excelled their contemporaries on the Continent, and it is fortunate that a typical example has been secured for the Museum, where it can be studied to greater advantage than the similar figures still to be found in English churches. Three boldly designed capitals and one shaft of Transitional type, dating from the end of the twelfth century, were purchased from the same site. The Augustinian Abbey of Lesnes, founded by Richard de Lucy in 1178 between Plumstead and Erith, to the east of London, was suppressed in 1525; the effigy was excavated on the site of the Lady Chapel. It has been placed in Room 8 at the foot of the stairs leading down from the main entrance.

Two candle-bearing angels of carved limewood by the great Franconian sculptor, Tilmann Riemenschneider (1468-1531), were bought out of the funds munificently bequeathed by the late Captain H. B. Murray. These angels had long been known to special students of Riemenschneider's work, but their position in the remote village of Wolferstetter, near Kulsheim, in Baden, made them difficult of access, and their high qualities could hardly be discerned under a disfiguring coat of modern paint. The colour has now been carefully removed, and the beautifully carved surface of the figures revealed; they may be dated about 1510. The Museum has possessed for many years a large group of two figures (forming part of an altarpiece of the Holy Kindred) by Riemenschneider, and two little heads of Adam and Eve, which, if they are admitted as his work, must be considered his masterpiece in sculpture on a small scale.

A further acquisition out of the funds of the Murray Bequest has been that of a small and exquisitely finished group in wood of the Lamentation over the Dead Christ, the work of a sculptor of the Middle Rhine district in the first half of the sixteenth century; the treatment of the heads to some extent recalls the work of Conrad Meyt of Worms. It was formerly in the Spitzer and Dollfus collections, dispersed in Paris in 1893 and in March of the present year respectively. This group and the two angels are temporarily exhibited in a case on the staircase to the right of the main entrance, outside Room 62, previous to their being placed in Room 100 with the remainder of the Murray Bequest.

Besides the acquisitions by purchase, the Department has been generously presented by Miss S. Mary Forbes with a life-sized terra-cotta group of a Mother Nursing Her Baby, by Jules Dalou (1838-1902). This is exhibited in a recess of the entrance-hall immediately to the left of the main entrance.

It is evident that the Department of Architecture and Sculpture is steadily gaining in interest.



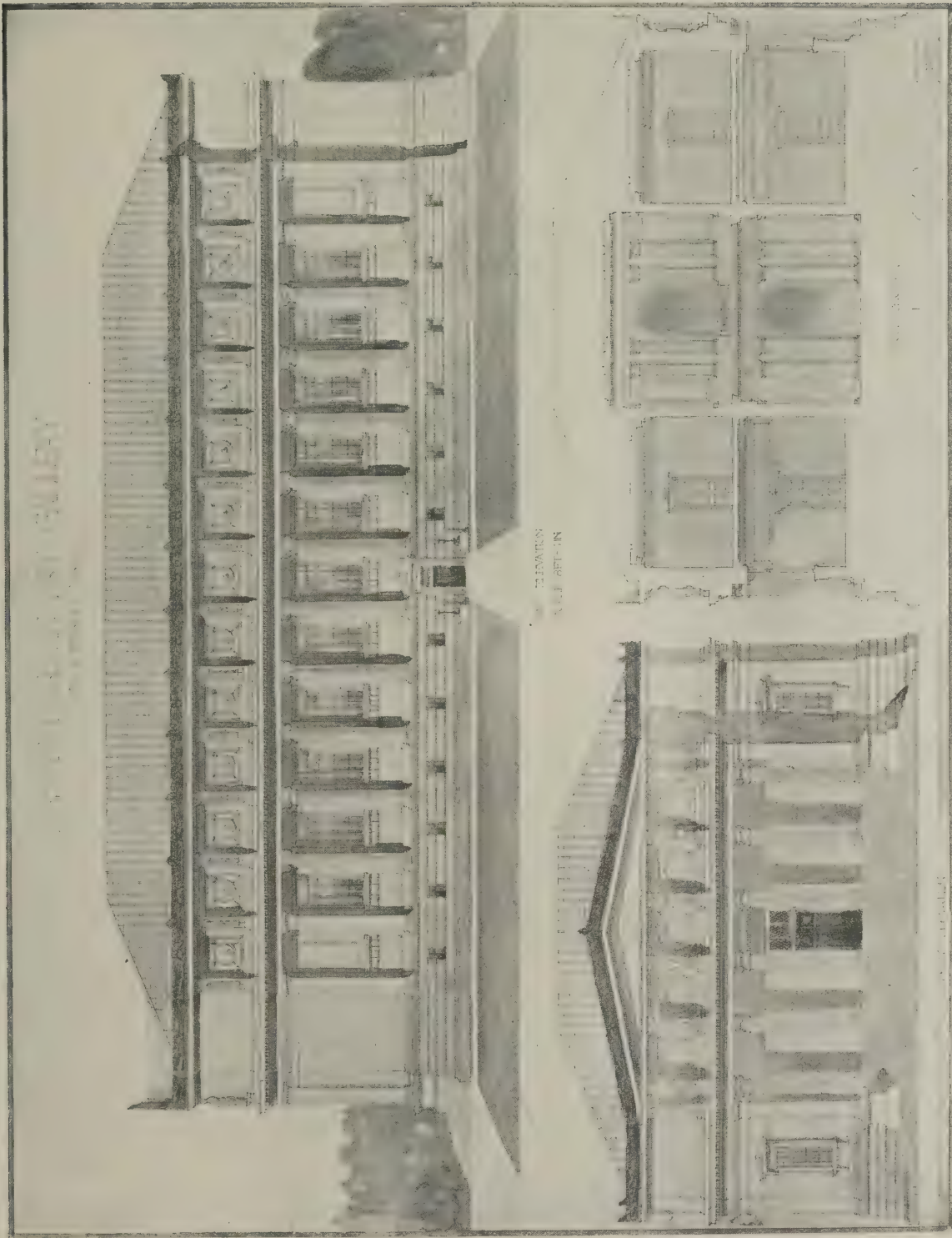
Refectory Building.



Academic Building.

SWEET BRIAR INSTITUTE, SWEET BRIAR, VIRGINIA, U.S.A.
CRAM, GOODHUE AND FERGUSON, ARCHITECTS.

STUDENTS' PAGE.

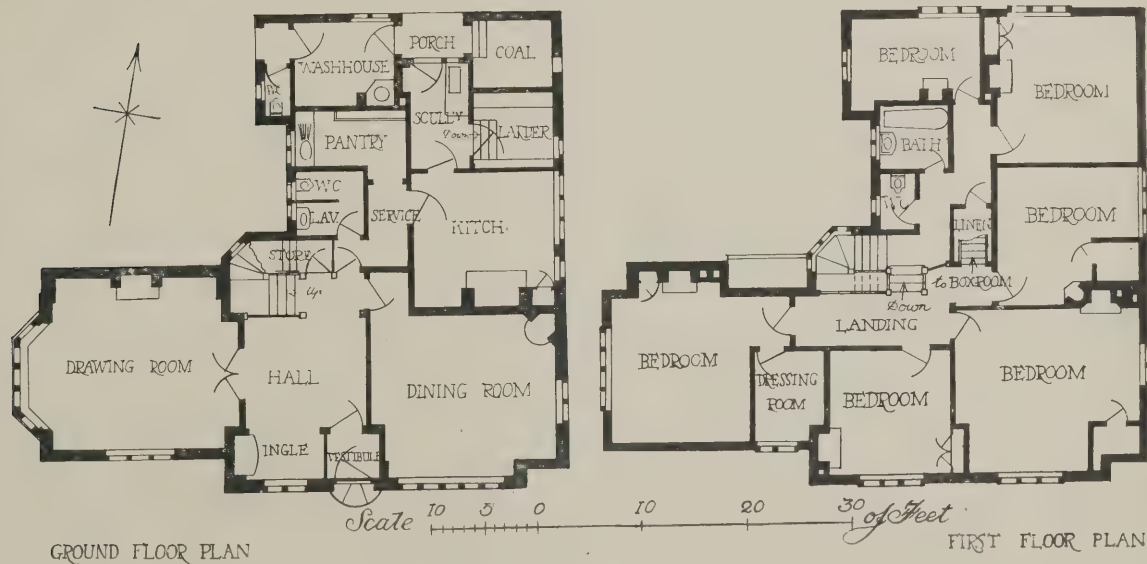


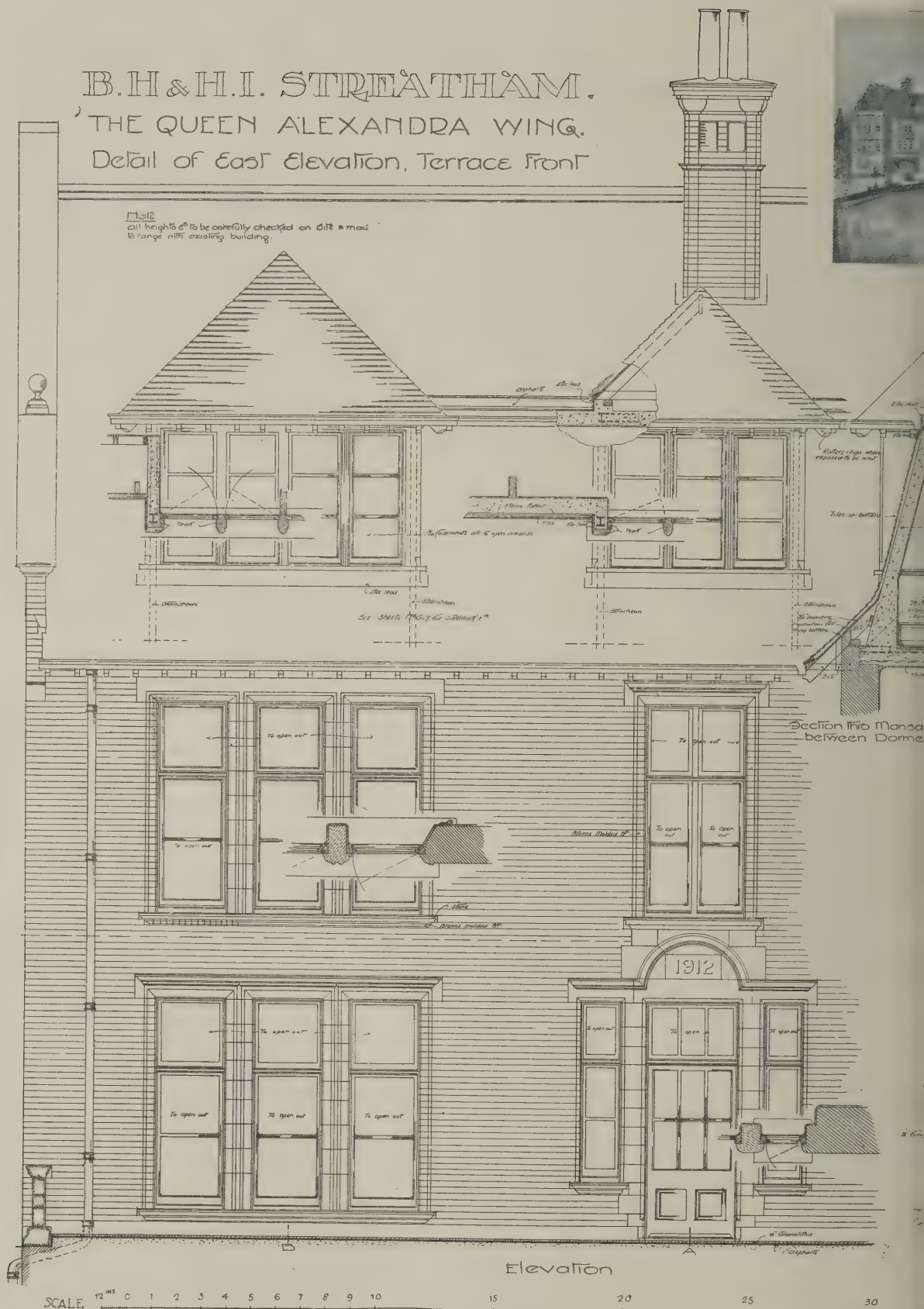
TESTIMONIES OF STUDY FOR R.I.B.A. FINAL EXAMINATION: APPROVED DESIGN, SUBJECT V. (a)—AN ART GALLERY.

BY F. JENKINS.



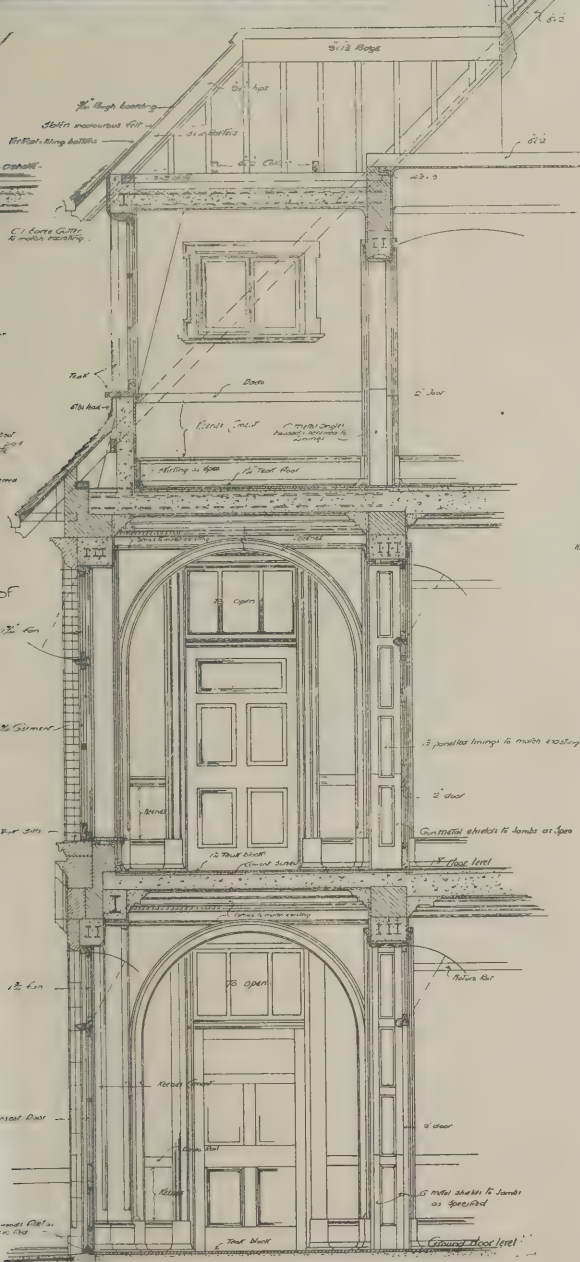
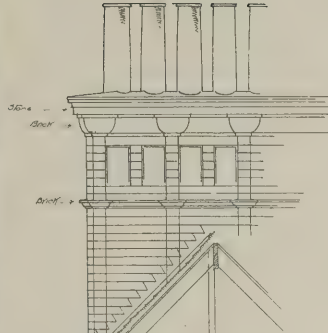
HOUSE at HALE, CHESHIRE.
FRANK B. DUNKERLEY, F.R.I.B.A., ARCHT.



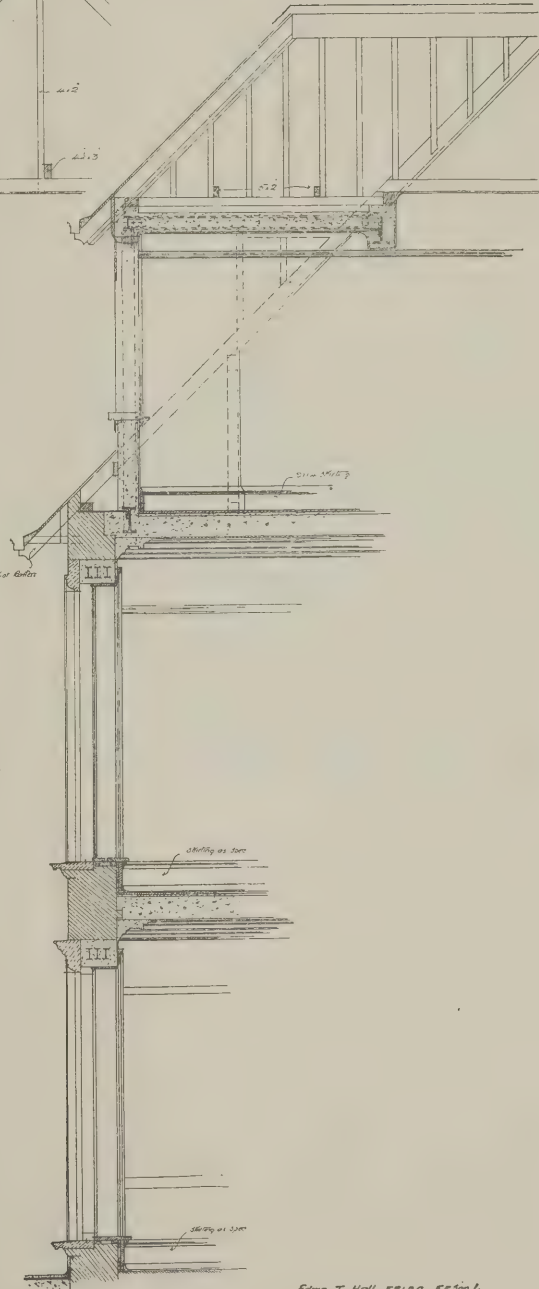


WORKING DRAWINGS BY WELL-KNOWN ARCHITECTS. X.—DETAIL OF BRI

EDWIN T. HALL, F.R.I.B.A., AND E. STAN



Section thro A.



Section thro B

Edwin T Hall F.R.I.B.A. Resident.
E Stanley Hall M.A. A.R.I.B.A.
Architects -
22 Bedford Square N.C.

35

40 OF FEET

HOME AND HOSPITAL FOR INCURABLES, STREATHAM, LONDON, S.W.

HALL, M.A., A.R.I.B.A., ARCHITECTS.

A NEW GLASGOW SCHOOL.

The plans of a new school which has just been erected at Langside, Glasgow, display some novel features. Each classroom has its own separate cloak-room putting on it, and is entered from either the class-room, the assembly hall, or the balcony. This arrangement greatly facilitates the easy administration of the school and tends to increased efficiency in discipline. The buildings are of two storeys in height and occupy a portion of a large site facing Carmichael Place on the east and bounded by Cathkin Road on the west. The Carmichael Place frontage is 170 ft., and the depth of the wings is about 120 ft. The building is of red sandstone, obtained from a Dumfriesshire quarry, the front walls being of polished marble with a rock-faced base, and the other walls are of square-dressed rubble with polished dressings.

On the ground floor is the central hall, which are twelve classrooms, each accommodating fifty pupils. In the north

wing there is a manual-instruction workshop; teachers' rooms are situated at the south end adjacent to the entrance and stair. A corridor connects the school to an infant school previously erected on the site, and a doctor's room is placed convenient to both schools.

On the upper floor there are twelve classrooms, each for fifty pupils, with a cookery-room, and a three-apartment house for housewifery classes.

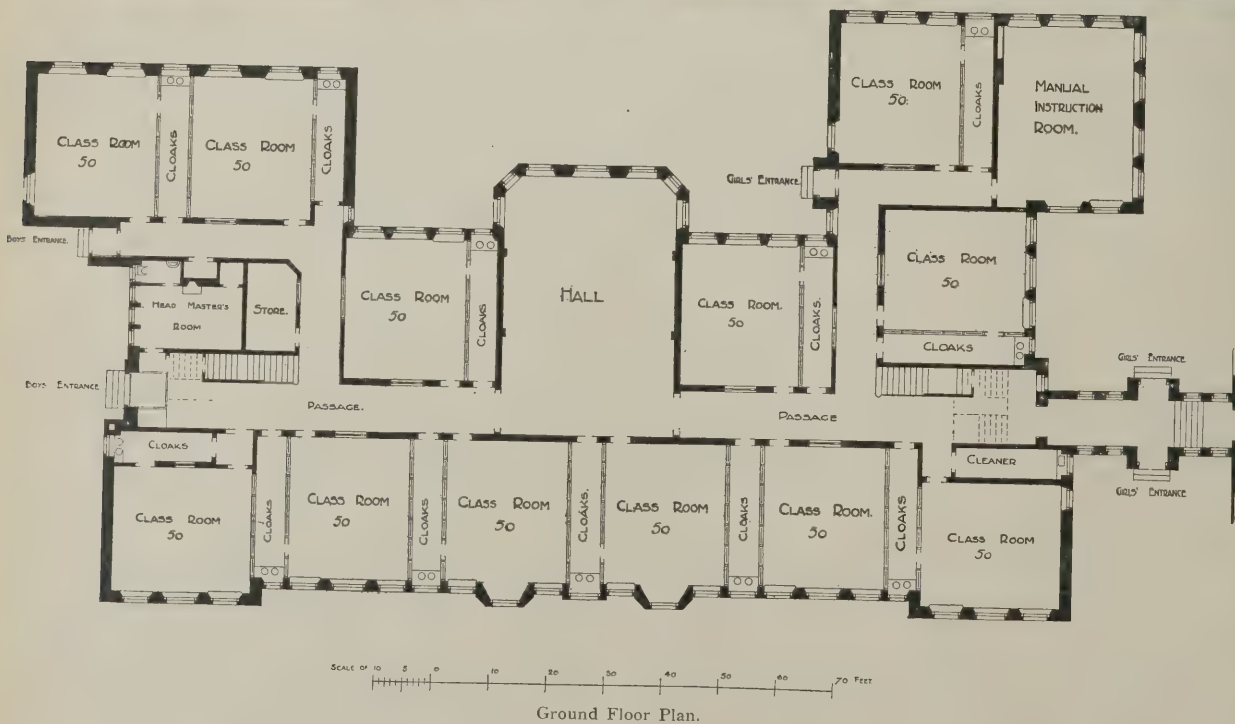
Separate entrances are provided for boys and girls, while access may be had to the drill hall from the surrounding playgrounds.

The cost of the buildings has been about £17,000. Messrs. Macwhannell, Rogerson, and Reid, of Glasgow (senior partner, Mr. Ninian Macwhannell, I.A., F.R.I.B.A.), were the architects.

BUILDING TRADES AMALGAMATION.

Mr. C. W. Bowerman, M.P., Secretary of the Parliamentary Committee of the Trades Union Congress, sent out last week

a circular intimating that ballot papers will be ready for issue in February to the building trade unions who desire to take part in the ballot on the proposal to amalgamate. The scheme for amalgamation is in two parts; the first, which, if endorsed by the ballot, will be binding on all members, deals with amalgamation for trade purposes only; and the second, which will be optional, is for amalgamating friendly benefits. Contributions of the individual members to the first part of the scheme are to be at the rate of 2½d. per member per week (2d. for benefit, halfpenny for management). The benefits provided for are 15s. per week in case of strike or lock-out, 4s. 6d. per day for a period not exceeding a month in case of "victimisation," and 2s. 6d. per day for a similar period for trade privileges. No benefits are to be paid during the first six months after the amalgamation, and no reserve of any existing union is to be interfered with in any way, but each union will be responsible for its own benefits until the central fund is available. It is proposed that in the amalgamation for friendly benefits as



NEW SCHOOL AT BATTLEFIELD, GLASGOW. MACWHANNELL, ROGERSON, AND REID, ARCHITECTS.

well as trade benefits provision shall be made for the union to become an approved society under the Insurance Act, paying also additional sickness benefit, unemployment benefit, disablement, funeral, and superannuation benefits.

NEWS ITEMS.

Osborne Naval College to be Rebuilt.

It is understood that the Royal Naval College, Osborne, is to be rebuilt permanently on the present site at a cost of £200,000, and that the work will be begun almost immediately.

Stead Memorial on the Embankment.

The London County Council has consented to the placing of a medallion to the memory of the late Mr. W. T. Stead on one of the granite pedestals on the Victoria Embankment.

Rebuilding of Newport Bridge.

A sub-committee of the Newport (Mon.) Corporation which has had charge of the preliminary arrangements for the rebuilding of Newport Bridge decided last week that the new bridge should be of reinforced concrete. It is estimated that this will save the town about £25,000.

Chertsey Lock to be Reconstructed.

Plans for the reconstruction of Chertsey Lock were approved by the Thames Conservancy last week. The work is estimated to cost £9,250, whereas the construction of a lock on a new site would have cost £12,630. The lock will be ready by March next.

Superstructure of the London County Hall.

At last week's meeting of the London County Council it was decided to invite tenders from eighteen selected firms for the erection of the superstructure of the new County Hall, estimated to cost £600,000. It was also decided that, in order to secure effective supervision, the joinery and stone work should be prepared within a radius of twenty miles from Charing Cross.

Royal Society of Arts Papers.

Among the papers to be read before the Royal Society of Arts after Christmas are—"The Economic and Hygienic Value of Good Illumination," by Mr. Leon Gaster; "Steel Pipes versus Cast-iron Pipes for the Conveyance of Gas, Water, and Air," by Mr. C. L. MacCarthy; "The Physical Properties of Clay," by Mr. Walter C. Hancock; and "The Architectural Treatment of Shops," by Mr. H. V. Lanchester, F.R.I.B.A.

New Post Office, Bishop's Stortford.

A new head post-office has been erected at Bishop's Stortford by Messrs. J. Day and Son from designs by Mr. W. H. Atkin-Berry, F.R.I.B.A., of the firm of Messrs. Kidner and Berry, London, E.C. The buildings comprise public office, sorting offices, telegraph and telephone instrument rooms and battery house, postmaster's offices, postmen's, linesmen's, and telegraph-boys' rooms, rest-rooms for the clerical staff, lavatories, cycle house, truck shed, engineers' stores-house, and numerous other stores, rooms, etc.

Street-Cleaning by Suction.

A demonstration has been given in Southport of a patent vacuum street sweeper brought out by Messrs. J. and P. Hill, of Sheffield. The machine, which is the invention of an engineer in Milan, is petrol driven, and the front resembles that of an ordinary motor car, but is fitted with a cylindrical roller, containing thirty-seven disc brushes, the rapid revolution of which gives a suction effect. It is claimed that the machine will sweep the road or street without raising any dust, and without causing any damage to the surface.

New Offices for Crown Agents for the Colonies.

The offices of the Crown Agents for the Colonies in Whitehall Gardens having been scheduled for demolition under the Government Sites Act of last year, the Crown Agents have decided, with the concurrence of the Colonial Office, to erect new buildings on the Westminster Embankment, close to the Houses of Parliament. The architects are Messrs. John W. Simpson and Maxwell Ayrton.

Whitgift Hospital Saved from Demolition.

The further widening of North End, Croydon, near the Whitgift Hospital, was again discussed by the Borough Council last week, with the result that the old Elizabethan almshouses, as far as that authority is concerned, are now saved from demolition. The Council, by 30 votes to 18, adopted a plan of widening which will carry the new line of frontage across to the other side of the road opposite the hospital, thus leaving it intact. The scheme is estimated to cost £164,000.

A Reinforced Concrete Rising Main.

A reinforced concrete rising main at Luton has been constructed on the system of the British Improved Construction Co. It is about a mile long, with an internal diameter of 27 in. The skin thickness of concrete is 3 in., and the steel reinforcement amounts to 2½ per cent. of the volume of concrete. The pipe, which has no lining of any kind, withstood a test pressure of 60 lb. per sq. in. continuously, and the Borough Engineer of Luton found that after it had stood full for twelve hours the amount of water lost was only four gallons, a result which, in his opinion, indicates the main to be perfectly watertight, since the valve closing its bottom end could not be seen and was possibly not absolutely watertight. The price charged for the main delivered at Luton was £1 7s. 7d. per lineal yard, whereas the lowest tender for cast-iron pipes was £2 2s. 7d. per yard.

Discoveries in an Essex Church.

Boreham Church, Essex, has been reopened by the Bishop of Barking after restoration, including the reconstruction and reinstatement of an open timber roof, which was ceiled over with lath and plaster about 250 years ago. The architects under whose direction the work has been carried out were Messrs. Chancellor and Son. In repairing the plaster over and round the arch between the nave and the tower a discovery was made of the original Norman arch, the voussoirs, or arch bricks, being of Roman material. The existing arch was inserted in the fourteenth century, the responds of the old opening being cut away for the purpose, but the old arch itself was left *in situ*. Close against the north jamb of the exist-

ing archway, a piscina of the fourteenth century was brought to light, and the remains of another Norman arch were discovered; but owing to the presence of a mural monument on the wall against the south respond of the chancel arch it was not possible to find out with certainty whether the remains of a similar arch exist on that side also. The church has a massive central Norman tower, a thirteenth-century font, and a beautiful altar tomb.

The London Calendar.

From Mr. W. Monk, R.E., of 72, New Bond Street, London, W., we have received a copy of the "Calendarium Londinense" for 1913. It consists of a sheet measuring about fifteen by eleven inches, bearing upon the upper half an original etching of the Guildhall, by Mr. Monk, hand-printed from the copper, the lower half bearing the calendar of the year in simple classic type. It is issued at 2s. 6d. net and can be obtained direct from Mr. W. Monk and from Mr. Elkin Mathews, 4, Cork Street, W., or it can be ordered through any print or bookseller. This is the eleventh of the same series, the others being as follows: 1903, St. James's Palace; 1904, Clifford's Inn; 1905, Old Westminster; 1906, St. Paul's from Fleet Street; 1907, Hyde Park Corner; 1908, Staple Inn; 1909, The Tower; 1910, Westminster from the River; 1911, St. John's Gate, Clerkenwell; 1912, Old Dick Whittington Inn.

THE STABILITY OF WALLS.

In order to have a safe wall it is necessary, in the first place, to have a good foundation. The greatest difficulty occurs on clay, not because clay will not bear the pressure, but because it expands and contracts according to the amount of moisture that permeates it. It expands when the rain percolates through it, and in contracting again seeks the line of least resistance. A depth of 5 ft. from the surface is the minimum that should ever be given to the base of the foundations, and the deeper the better. On the side of a hill the difficulty is increased tenfold, and the only safe remedy is a complete concrete raft of such strength that the whole building must move as one piece if any movement should occur. Even then some diminution of pressure may occur on the down-hill side owing to the clay expanding and not coming back again, when a slight leaning may be detected by accurate plumbing, but it is not likely to reach serious or even noticeable proportions. One wall may overhang 3 in. and be perfectly safe, while another may overhang the same amount and be dangerously near collapse. The essential point is the position of the centre of gravity. The common theory is that so long as a vertical line through the centre of gravity of a mass falls within the base there is no danger of overturning, but it is not sufficiently known that in proportion as the centre of gravity overhangs the centre line of the base, so the pressure is increased towards the side it approaches, and thus the safe working stress on the material or the foundation may be exceeded. When any wall is out of plumb the most important thing is to find the cause, and that being known, the remedy may suggest itself. As the medical men say, "To diagnose the disease is half the cure."—From the "Sanitary Record."

FLITCHED AND FLITCHED PLATE BEAMS.

BY W. N. THOMAS, B.Sc. (Eng.), Lond.

A FLITCHED beam is formed by sawing a balk longitudinally along its centre axis, and bolting together, side by side, the two portions, so that the newly sawn surfaces form the outer faces of the beam (Fig. 2). Each of these pieces is known as a flitch, and one of them is reversed end for end so that the two butt ends do not come together. The advantage of this is that a beam of more uniform strength is obtained than when an undivided balk is used, as it may be that the butt end of a balk is stronger than the opposite end. The heart of a balk, too, is sometimes decayed, and it is an advantage of the flitched beam that the heart—being exposed—can be examined and any faults detected. It is also well to have the heart exposed if the balk has not been thoroughly seasoned, as it then dries much more quickly.

Usually the flitches are separated by wood strips, distance pieces or packings, held in position by the bolts (Figs. 5 and 6), so that a wider surface is obtained for the support of the superincumbent load. These do not add to the strength of the beam, though possibly they stiffen it slightly in the lateral direction.

"Open" beams of this type are not so liable to dry rot as solid balks, as they are more efficiently ventilated, but neither are they so fire resisting. The number of flitches is not limited to two—three or four being sometimes used (Fig. 6).

A "sandwich" or flitch plate beam is formed by inserting iron or steel plates vertically between the timber flitches and bolting the whole tightly together (Fig. 3). Sometimes also a "double flitched beam" is formed by bolting steel plates on to the outer vertical faces of an existing beam; for the purpose of strengthening and stiffening it (Fig. 4). The depth of the steel flitch plates should be slightly less than the depth of the flitches, in order to prevent—when shrinkage takes place in the timber—an undue proportion of the load being carried directly by the steel on to the abutments and so crushing or splitting the stone template.

Another method of preventing this and ensuring that the load shall be transferred to the abutments through the timber, when it will of course have much less intensity of pressure on the stone, is to cut a groove or chase in the stone immediately above and below the steel. The plate may then be of the same nominal depth as the timber.

The flitches and plates are bolted together with $\frac{1}{2}$ in. to $\frac{3}{4}$ in. bolts, spaced 1 ft. 6 in. to 2 ft. apart according to the span, and these are provided with large washers at their ends to avoid crushing the timber (Fig. 7). The bolt near the centre of the span, or where the bending moment is greatest, should, if possible, be arranged so as not to cut through tension fibres, i.e., it should be above the neutral axis in a simply supported beam.

Most of the load is carried directly by the flitches, and a portion of this is then transferred to the steel plate through the bolts, and acts as a series of concentrated

loads. A small portion may be transferred by friction against the sides of the plate as the flitches deflect. The exact effect of the bolt holes through the beam is awkward to estimate, and they are generally neglected in ordinary calculations.

The theory of the flexure of a "flitched plate" or "double flitched" beam may be dealt with as follows:—

Notation.

- Let B = total width of timber in all the flitches in inches.
- nB = total width of steel in all the plates in inches.
- D = depth of flitches in inches.
- mD = depth of plates in inches.
- l_t = max. strain in flitches.
- l_s = " " " plates.
- f_t = " stress in flitches in tons per sq. inch.
- f_s = max. stress in plates in tons per sq. inch.
- E_t = modulus of elasticity of timber in tons per sq. inch.
- E_s = modulus of elasticity of metal in tons per sq. inch.

Then as strain is proportional to the distance from the neutral axis, and as the deflections of the timber and plates are equal because they are bolted firmly together—

$$\frac{l_t}{l_s} = \frac{\frac{D}{2}}{\frac{mD}{2}} = \frac{1}{m} \dots \dots (1)$$

Also strain = $\frac{\text{stress}}{E}$ $\therefore \frac{l_t}{l_s} = \frac{f_t \div E_t}{f_s \div E_s} = \frac{f_t E_s}{f_s E_t}$

\therefore from (1) $\frac{1}{m} = \frac{f_t E_s}{f_s E_t}$ $\dots \dots (2)$

But approx. E_s = 13,500 tons per sq. inch for steel and 13,000 tons per sq. inch for iron, and E_t may be taken as 650 to 700 tons per sq. inch, so that as is usually assumed $E_s \div E_t$ is approx. 20

\therefore substituting in (2) $\frac{1}{m} = \frac{20f_t}{f_s} \dots \dots (3)$

Assume for the purposes of calculation that the max. allowable stress per sq. inch

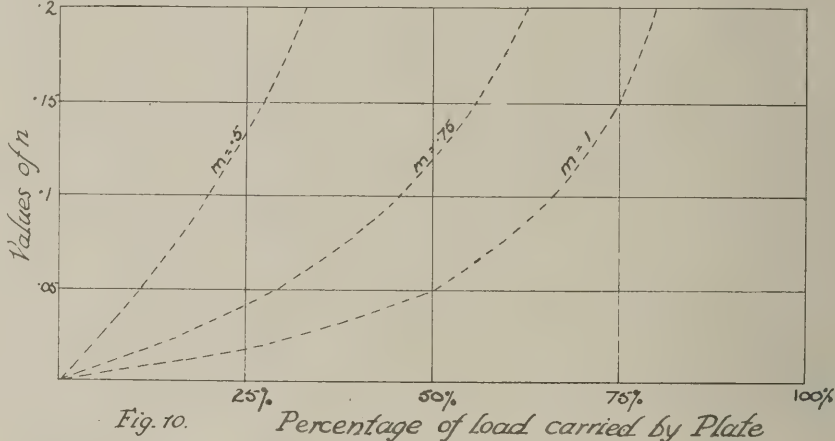


Fig. 10.

Percentage of load carried by Plate



Fig. 1.

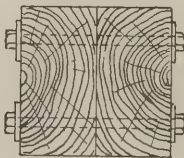


Fig. 2.

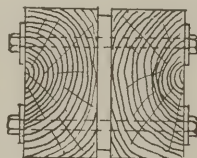


Fig. 3.

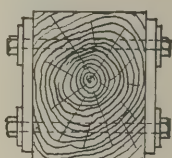


Fig. 4.

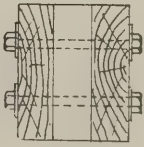


Fig. 5.

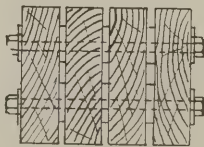


Fig. 6.

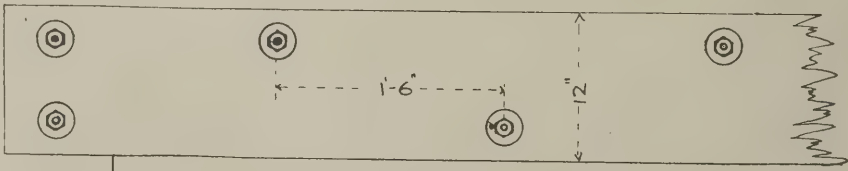


Fig. 7.

is:—fir $\frac{1}{2}$ ton, oak or pitch pine $\frac{3}{4}$ ton, steel $7\frac{1}{2}$ tons, and wrought iron 5 tons.

Then, if the max. strength of both the timber and the plates is to be utilized, we see, by substitution in (3) that m should equal $\frac{3}{4}$ for fir flitches and steel plates (4a) or $\frac{1}{2}$ for oak " " (4b) or $\frac{1}{2}$ for fir flitches and iron plates (4c) or $\frac{1}{3}$ for oak " " " (4d)

It may now be easily seen from (3) that if m is greater than the value here given, f_t must be less than the maximum allowable working stress for timber, otherwise f_s will exceed the safe stress for the plate; and similarly if m is less than the value given in (4) f_s must be less than the maximum allowable working stress for the plate, or f_t will exceed that for the timber. So that in neither case is the whole strength of the material efficiently utilized.

For example, taking a common case, where $m = 1$ i.e., the flitches and flitch plates of the same depth, from (3) $f_s = 20f_t$ ∴ if $f_t = \frac{1}{2}$ ton per sq. inch, $f_s = 10$ tons per sq. inch, which is too high.

If f_s is limited to $7\frac{1}{2}$ tons per sq. inch, f_t is only $\frac{3}{8}$ ton per sq. inch. In any particular case—for example using fir and steel—if m is greater than $\frac{3}{4}$, the ratio of the maximum allowable stress (f_t) using flitch plates, to the maximum allowable stress (f'_t) with no plates, is

$$\frac{f_t}{f'_t} = \frac{f_s \div 20m}{f_s \div 20\frac{3}{4}} = \frac{3}{4m} \quad (5a)$$

For oak and steel if $m > \frac{1}{2}$
$$\frac{f_t}{f'_t} = \frac{1}{2m} \quad (5b)$$

For fir and iron if $m > \frac{1}{2}$
$$\frac{f_t}{f'_t} = \frac{1}{2m} \quad (5c)$$

For oak and iron if $m > \frac{1}{3}$
$$\frac{f_t}{f'_t} = \frac{1}{3m} \quad (5d)$$

These figures show—if the safe working stress in the plate is not exceeded—what proportion of the assumed safe strength of the timber is used.

Similarly from (3)

for fir and steel if $m < \frac{3}{4}$
$$\frac{f_s}{f'_s} = \frac{20f_t m}{20f_t \frac{3}{4}} = \frac{4}{3}m \quad (6a)$$

for oak and steel $m < \frac{1}{2}$
$$\frac{f_s}{f'_s} = 2m \quad (6b)$$

for fir and iron $m < \frac{1}{2}$
$$\frac{f_s}{f'_s} = 2m \quad (6c)$$

for oak and iron $m < \frac{1}{3}$
$$\frac{f_s}{f'_s} = 3m \quad (6d)$$

Considering a beam in which m is greater than the values stated in (4a), (4b), (4c) and (4d) we have:—

The Moment of Resistance of the original beam (no plates) = $f'_t BD^2$

Ditto flitches = $f_t BD^2$

Ditto flitch plates = $f_s nB (mD)^2$

∴ Total Moment of Resistance of flitched plate beam = $\frac{BD^2}{6} (f_t + nm^2 f_s)$

and as $f_s = 20mf_t$,

$$M.R. = \frac{f_t BD^2}{6} (1 + 20nm^3)$$

∴ strength of beam with plate
Do. without plate
$$= \frac{f_t BD^2}{6} \frac{(1 + 20nm^3)}{f'_t BD^2}$$
$$= \frac{f_t}{f'_t} (1 + 20nm^3) \quad (7)$$

or the increase of strength expressed as a fraction of the original strength

$$\frac{f_t}{f'_t} (1 + 20nm^3) - 1 \quad (8)$$

If m has values below those given in (4a), (4b), (4c) and (4d), then as was previously pointed out, the timber may be considered as working up to the maximum allowable safe stress for the material (i.e., $f_t = f'_t$), but the maximum stress in the plate (f_s) will be below the allowable safe stress (f'_s).

Thus the M.R. of original beam = $\frac{f_t BD^2}{6}$

M.R. of flitched plate beam
$$= f_t \frac{BD^2}{6} + f_s \frac{nB(mD)^2}{6}$$

∴ fractional increase = $\frac{f_s nm^2}{f_t}$
$$= 20nm^3 \text{ (from (3))} \quad (9)$$

It will be noticed that this is always positive.

For fir and steel if $m = 1$, the fractional increase in strength by substitution in (8) is

$$\frac{3}{4m} (1 + 20nm^3) - 1 = \frac{3}{4} (1 + 20n) - 1$$
$$= 15n - \frac{1}{4} \quad (10)$$

This is equal to 0 if $n = \frac{1}{60}$

So that the beam is not strengthened by the addition of one or more flitch plates of the same depth as the flitches unless

$$n > \frac{1}{60} \text{ for fir and steel}$$

or similarly unless $n > \frac{1}{20}$ for oak and steel

$$> \frac{1}{20} \text{ for fir and iron}$$

$$> \frac{1}{10} \text{ for oak and iron}$$

In a beam having plates of less thickness than specified here, the load which the original beam would carry safely will cause excessive stresses in the plates, and so should not be applied.

The relative thicknesses are largely decided by the standard sizes of timber and of steel or iron plate—plate thinner than $\frac{3}{8}$ " or thicker than 1" being seldom used.

It is very unlikely in practice, therefore, that n would be as low as $\frac{1}{60}$, but it might quite easily be less than $\frac{1}{10}$. An approximate rule often observed is that n shall be from $\frac{1}{10}$ to $\frac{1}{12}$, and on the above assumptions it is shown that in certain cases this proportion is not sufficient to strengthen the beam, though it will cause the deflection to be less.

Curves indicating the percentage increase of strength for a few values of n and m are given in diagrams (8) and (9) and are explained later.

Deflection.—The well-known formula for the deflection (d) of a beam is $d = \frac{K.W.l^3}{EI}$

where K = constant depending upon the distribution of the load W .
 $= \frac{1}{48}$ for central concentrated load on a simply supported beam.
 $= \frac{5}{384}$ for evenly distributed load on a simply supported beam.

l = span in inches.
 E = modulus of elasticity.
 I = moment of inertia of cross section in (inch)⁴ units.

The moment of resistance (M.R.) is equal to the bending moment, and this is proportional to the load W for any given distribution ∴ the proportion of W carried by the flitch plate is

$$\frac{W \cdot \frac{M.R. \text{ of plate}}{f_s nB (mD)^2}}{W \cdot \frac{M.R. \text{ of whole beam}}{f_t BD^2}} = \frac{W \cdot f_s nm^2}{f_s nB (mD)^2 + f_t BD^2} = \frac{f_s nm^2}{\frac{f_s nm^2}{6} + \frac{f_t BD^2}{6}}$$

or from (2)
$$W \cdot \frac{f_s (nm^2 + \frac{f_t}{E_s m})}{nm^2 + \frac{I}{20m}} = W \cdot \frac{20nm^3}{20nm^3 + I} \quad (11)$$

Thus in an ordinary beam, when $m = 1$ and $n = \frac{1}{20}$, the flitch plate carries $\frac{2}{5}$ W . Other values are shown by the curves in Fig. (10).

Then as the relationship between f_s and f_t was deduced on the assumption that the deflections of the timber and the plate are equal, from (11)

the deflection of beam (d) = deflection of plate

$$= \frac{K \left(\frac{20nm^3}{20nm^3 + I} \right) W l^3}{E_s nB (mD)^3} \quad (12)$$

and the deflection d_o of the original beam
$$= \frac{K W l^3}{E_t BD^3} \quad (13)$$

∴ dividing (12) by (13)
$$\frac{d}{d_o} = \frac{E_t (20nm^3 + I)}{E_s (20nm^3 + I)} = \frac{1}{20nm^3 + I} \text{ as } \frac{E_t}{E_s} = \frac{1}{20}$$

or the fractional increase in stiffness is $20nm^3 \quad (14)$

This is always positive, i.e., the flitched plate beam is always stiffer than the original beam and the deflection less. In the case when $m = 1$ and $n = \frac{1}{20}$ the deflection is $\frac{2}{5}$ of the deflection of the original beam under the same load.

Cost.

Let C_s = cost per cubic ft, iron or steel
and C_t = " " timber
and $\frac{C_s}{C_t} = r$

Cost of original beam = $C_t \frac{BD}{144}$ per ft. run

Ditto flitched plate beam
$$= \frac{C_t BD}{144} + \frac{(nB)(mD)C_s}{144}$$
$$= \frac{C_t BD}{144} (1 + rnm)$$

∴ fractional increase in cost = $rn m \quad (15)$
and fractional increase in strength, from (8),
$$= \frac{f_t}{f'_t} (1 + 20nm^3) - 1$$

Thus neglecting any increase in stiffness,

due to the flitch plates and for values of m greater than those given in (4), a flitch plate beam is more economical than a timber beam of the same depth only when

$$\frac{f_t}{f_s} (1 + 20 nm^3) - 1 > rnm$$

i.e., in the case of fir flitches with steel plates when

$$\frac{3}{4m} (1 + 20 nm^3) - 1 > rnm \dots (16a)$$

or if $m = 1$, when $n(15-r) > \frac{1}{4}$

By inspection it may be seen that as r increases, $(15-r)$ decreases, and consequently the minimum value for n must increase until, when r reaches 15, $(15-r)$ becomes zero, and n infinite.

For values of $r > 15$, as n is necessarily always positive, the left hand expression becomes negative, and can therefore never be greater than the positive quantity, $\frac{1}{4}$.

Similar expressions to (16a) may be deduced for other conditions; thus for oak and steel, $m > \frac{1}{2}$,

$$\frac{1}{2m} (1 + 20 nm^3) - 1 > r, n, m \dots (16b)$$

or $n(10-r) > \frac{1}{2}$ if $m = 1$

for fir and iron, $m > \frac{1}{3}$

$$\frac{1}{2m} (1 + 20 nm^3) - 1 > rnm \dots (16c)$$

or $n(10-r) > \frac{1}{2}$ if $m = 1$

for oak and iron, $m > \frac{1}{3}$

$$\frac{1}{3m} (1 + 20 nm^3) - 1 > rnm \dots (16d)$$

or $n(20-3r) > 2$ if $m = 1$

For values of m below those given in (4), the expression in each case reduces to $20m^2 > r \dots (16e)$

by equating (9) and (15).

In the above investigation, the only factors taken into account have been strength and cost, whereas, in a practical case, of course, there are several other points to be considered, such as the stiffness, and the allowable dimensions—depth and width—of the beam.

An idea of the actual values of r obtaining in practice may be formed by an examination of the prices given in such a price book as Lockwood's (1912), which states that the cost of ordinary flitched beams in fir is about 3/2 per cub. ft., or in oak 7/- per cub. ft., while the cost of steel flitch plates is 11/- per cwt., i.e., about 49/- per cub. ft.

The curves shown in Figs. (8) and (9) are instructive. Curves (1), (2) and (3), Fig. (8), show the percentage increase of strength of a fir beam, reinforced with a steel plate, over a similar beam without the plate. For all values of m above $\frac{3}{4}$, equation 8 may be used (e.g., curve 1), and for values below $\frac{3}{4}$, equation 9 may be used (e.g., curve (3)). The data for curve (2) ($m = \frac{3}{4}$) may be obtained from either of these equations. All curves for which m is less than $\frac{3}{4}$ spring from the origin, and show that for any value of n there is then an increase of strength.

Curves for which m is greater than $\frac{3}{4}$ give zero increase of strength for some definite value of n , and for smaller values show a decrease in the strength of the beam.

The data for curves (4) and (5), showing the percentage increase of stiffness is obtained from equation (14).

Curves (6) and (7) show the percentage increase of cost (equation 15).

The fact that curve (7) intersects curve (1) for a value of $n = .083$ indicates that for all values of n below this the percentage increase of strength in the beam

is not as great as the corresponding increase in cost; a result which may be obtained otherwise by substituting the values of $m = 1$ and $r = 12$ in the expression (16a) for a fir beam with steel plates.

The curves in Fig. (9) show the percentage increase of strength for varying values of m if n remains constant.

Curve (1) is for fir and steel ($n = .1$), (2) is for oak and steel or for fir and iron, ($n = .1$), (3) is for oak and iron ($n = .1$), (4) is for oak and iron ($n = .125$).

The lower portions of these curves are obtained from equation (9), and the upper portions from equation (8).

Their shape shows clearly the curious fact that, between limits—for a definite thickness of plate—the strength of a girder may be increased when the plate is either of very small or of great relative depth compared with the flitch, while for intermediate values the strength of the beam may be decreased.

Thus in curve (4) there is an increase of strength only if m is greater than .85 or less than .38, a result which may also be obtained by equating $\frac{1}{3m} (1 + 20 nm^3) - 1$ (equation 8) to zero.

The stiffness, however, always increases as the relative depth of the plate (i.e., m) increases, as shown by curve (5) which coincides with the lower portion of curve (1) up to the point (a), and represents the percentage increase of stiffness for $n = .1$.

In those cases in which the addition of a flitch plate appears to weaken the beam, the application of the maximum safe load for the original beam would produce

stresses possibly greater than the elastic limit of the material in the plate, so that if the load were removed there would be a permanent deflection, which the induced stresses in the timber would tend to remove.

The flitched plate beam would evidently not absolutely fail under a load less than the safe allowance for the original beam, as even though the plate failed, there would still be the original timber beam remaining to carry the load, but it would be inadvisable to use material stressed beyond its safe working stress.

GLASGOW CATHEDRAL RESTORED.

The restoration of Glasgow Cathedral has now been completed, and a detailed description of the work involved has been given in the "Glasgow Herald" by Mr. Jeffrey Waddell. Matters had indeed reached an almost critical stage when the present thorough overhauling of the old roofs was undertaken. The plaster ceilings, introduced at the beginning of last century, were removed, and the new roofs, in which as much as possible of the old timber was incorporated, were erected. These are a restoration of the old, with the exception of a few minor details and the precautionary steel truss and iron ties to take all possibility of strain from the walls. The copper roof covering which has replaced the old lead has been preferred for its lightness and durability. Already the appearance is practically the same as the old lead, except that there is a suggestion of even a finer colour to come. It is in the

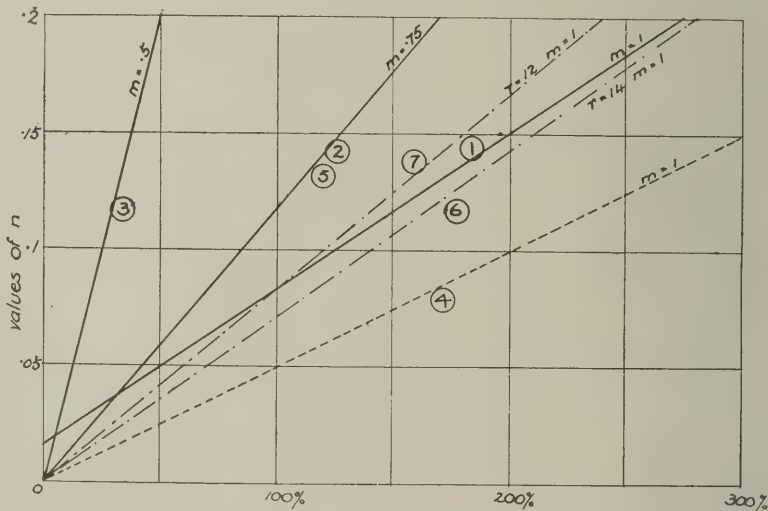


Fig. 8

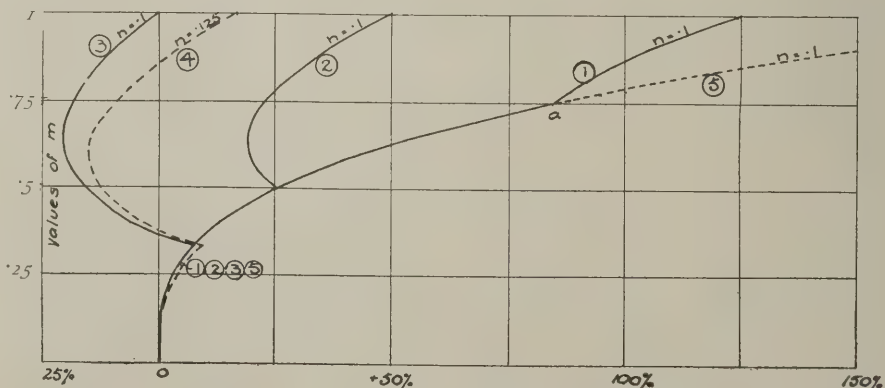


Fig. 9.

interior that most change has been made by the restoration which has just been completed.

Denholm, writing in 1797, described the ceiling of the choir thus: "From the top of the inner walls an arched roof springs to a vast height, finely ornamented." It is this ceiling which has been restored. It rises in a magnificent pointed trefoil section, admirably suited to the design of the fenestration of the east gable. The surface of the oak lining is divided into square compartments by large moulded ribs, while smaller ones run in a diagonal direction across each square. At the intersection of each rib there is a foliated or sculptured boss. The centre row at the apex of the vault most appropriately illustrates the Life of Our Lord.

The little gallery entered from the tower over the Rood at the west end of the choir, which was formerly used to support the great crucifix and the two side figures of Mary and John, has also been restored, but in a somewhat modern manner.

The roofs of the transepts have been renewed and decorated in a similar manner to the choir, carved and heraldic painted bosses being placed at the junction of all the ribs. The flat temporary ceilings having been removed, these carvings may now be viewed from the floor of the crossing. The oak is rapidly coming to its right colour, and the heraldic painting of the bosses is a pleasant note in the colour scheme.

In striking contrast to the elaboration of the ceilings of the choir and transepts is the stern simplicity of the open timber roof over the nave. The first intention was to continue the scheme of decoration started in the choir, but as soon as the plaster ceiling had been removed it became apparent that the mediæval roof truss had been exposed to view to the ridge, and so the ancient roof has been restored as far as appearance is concerned, but supplemented with modern construction. The rafters, which are about 2 ft. apart, form a high, many-sided vault with a tie-beam over each wall shaft. The truss at the tie-beam is varied in section, being of pointed instead of square timber.

In addition to the new roofs a good deal of repair has been found necessary at the wallheads of the choir, nave, and aisles. In this connection an interesting discovery was made when the plaster ceiling was removed from the nave at the north-west corner. A part of the clock tower, including four steps of the stair from the nave wallhead level to the parapet of the tower, was found in situ.

Perhaps the construction of the aisle roofs is needlessly modern, although it must be confessed that the steel trusses are not visible from the nave or choir floor, and the triforium walk is not now much used unless by tradesmen. The old oak roofs had been replaced by pine many years ago, and the new spars are of pine. Two of the old oak rafters, however, have been retained in position to mark the design of the original roof.

The only part of the cathedral fabric which has not been overhauled is the central tower and spire. The large beams which carry the floors and staging are requiring attention.

Unfortunately, the stained-glass windows of the cathedral were made at a time before this fine art had been re-created. The result is that although the drawing of quite a number of the windows is good—some of it, indeed, is quite Michelangeloesque in its vigour—the glass is al-

most uniformly bad. As it was judged impossible to remove the stained glass, the next best thing has been done—the outer plate-glass has been removed and the glass thoroughly cleaned.

The roof of the choir is to be illuminated from the clerestory window-sills.

Mr. W. T. Oldrieve, of H.M. Office of Works, was responsible for the various works of restoration which have been carried out, under the supervision of Mr. M'Lay, clerk of works, by the firm of Messrs. George Laird and Son, joiners, Bridgeton. The carvings are by Mr. Clow, of Edinburgh, and Mr. Crawford, Glasgow. The heraldic painting is by Mr. Norman M. Macdougall, of Glasgow. The total cost of the works is about £15,000.

INSPECTION OF ANCIENT MONUMENTS.

ANNUAL REPORT.

THE report of the Inspector of Ancient Monuments (Mr. C. R. Peers) for the year 1911-12 has just been issued. In an accompanying memorandum the First Commissioner of Works, Earl Beauchamp, says:

In presenting the annual report of the Inspector of Ancient Monuments, it is perhaps desirable that I should preface it with a short statement of the arrangements now made for the administration of the Ancient Monuments Protection Acts, and of the considerations which have led me to ask for additional powers in the present Session of Parliament.

In the first place, the existing Acts are purely permissive in character. The State cannot undertake the guardianship, or arrange for the protection, of any monument, except with the consent—and, indeed, by the desire—of the owner.

But, when once the State has assumed control, the monument is thenceforward protected from damage or destruction by any persons whatsoever. The owner himself is deemed to have relinquished his rights of ownership so far as relates to any injury or defacement of the monument, and may be dealt with as if he were not the owner. Further than this, the Commissioners of Works are bound to maintain the monument out of such moneys as may be provided for the purpose by Parliament. The expression "maintain" includes "the fencing, repairing, cleansing, covering in, or doing any other act or thing which may be required for the purpose of repairing any monument or protecting the same from injury or decay." It is obvious that the cost of such maintenance must vary considerably in different cases; but the principles upon which the Commissioners are proceeding are to avoid, as far as possible, anything which can be considered in the nature of restoration, to do nothing which could impair the archaeological interest of the monuments, and to confine themselves rigorously to such works as may be necessary to ensure their stability, to accentuate their interest, and to perpetuate their existence in the form in which they have come down to us.

It is hoped that in this way the various monuments throughout the country, in the charge of the Commissioners, will become object lessons of the manner in which such remains should be treated, and will thus possess an educational, as well as an archaeological and artistic, value.

To advise and assist them in this respect is the duty of the Inspector of Ancient

Monuments, and the work itself is carried out by a special staff which has now been created for the purpose, and which works in the closest co-operation with the Inspector and can do nothing except with his approval. It may, I think, therefore be claimed that the branch of the Office of Works entrusted with the administration of the existing Acts is efficiently organised for the work it is required to perform.

This being so, it is gratifying to be able to say that the number of monuments of which the State has assumed, or has been asked to assume, the guardianship is increasing rapidly, as owners are beginning to realise the purposes of the Acts. At the same time, cases are frequently being brought to my notice of monuments which are suffering from neglect or threatened with actual damage or destruction. Some of these have been brought clearly to the notice of the general public, and it is evident that considerable interest is now taken in the subject, and that that interest is rapidly growing; this very fact, however, tends in some degree to intensify the danger, as there can be little doubt that in some cases the threat of destruction or removal is employed with the object of creating a fictitious value. Cases such as these, however, are not of frequent occurrence, and the danger is, perhaps, sometimes more apparent than real. Far more numerous are the cases in which monuments are suffering merely from neglect, and are being allowed slowly to fall into decay because the owner is unwilling himself to preserve them or to place them under the protection of the State.

It is, in my opinion, most desirable that the State should have power to intervene in such cases, and it is with that object that I am seeking further powers in the present Session.

Mr. Peers, in his report, states that the number of monuments now under the care of the Commissioners of Works is 116.

The number of monuments which have been placed under the protection of the Ancient Monuments Acts during the period from April 1st, 1911, to March 31st, 1912, is ten. Three additions have also been made to Schedule A of the Arrangements made between the Army Council and the First Commissioner.

Of these monuments five are in England and eight in Scotland.

The list is as follows:

Aberdeen, Old Machar Cathedral: the ruined transepts, Aberdeenshire; Chester Castle: the Gateway Tower, Cheshire; Carlisle Castle: Richard III.'s Tower, the curtain walls, etc., Cumberland; St. Andrews: ruins of Blackfriars Church, Fifeshire; Weobley Castle, Gower, Glamorganshire; Haddington: St. Martin's Church, Haddingtonshire; Kirkcudbright: Maclellan's Castle, Kirkcudbrightshire; Kirby Muxloe Castle, near Leicester, Leicestershire; Kirkwall: The Bishop's Palace, Orkney; Kirkwall: The Earl's Palace, Orkney; Westray: The Old Church on the West side, Orkney; Stirling: the Old Bridge, Stirlingshire; York Castle: the Round Tower or South Bastion, Yorkshire.

In addition to these, the transference of a number of other monuments, offered to the Commissioners by their owners, is now under consideration. In order to ensure a closer and more constant supervision, the arrangement by which the carrying out of all work on the monuments has hitherto been shared between a number of the Board's architects has been terminated, and a special staff, under Mr. Frank Baines, M.V.O., has been appointed to deal exclusively with this work. All caretakers of monuments are to make quarterly reports.

FRAGMENTS OF OLD
LONDON.

Whether Smirke's portico of the old General Post Office goes to St. Chad's Hall, Durham (which has petitioned for it as a façade for its new building) or not, it will in all probability be lost to London, like Temple Bar and so many other relics. The list is a long and interesting one; and it need not be confined to objects which have been removed out of London, for even within the circle of the metropolis there have been some notable "transplantings." An interesting list of them has been compiled by the "Observer." The most recent instance is that of

Crosby Hall

in Bishopsgate, which was removed in 1907-8, and the materials afterwards used in the building which now forms the hall at the Chelsea hostel, in connection with the University of London. It is a pleasure to see the fine timber roof, of late fifteenth-century workmanship, together with the bay window and other interesting mediæval features of the structure, preserved in the new building, and on the accomplishment of this the architects, Messrs. Wratten and Godfrey, are to be congratulated.

Temple Bar.

This was removed in 1878, and ten years later was re-erected as the entrance to Theobald's Park—Sir Henry Meux's property at Cheshunt, where it still remains.

The Colonnade to Burlington House.

The beautiful old colonnade which fronted Burlington House, in Piccadilly, was pulled down in 1866. The stones were all carefully removed to Battersea Park, where the colonnade was to be rebuilt, but the work was never carried out, and the fate of the ruins appears to be shrouded in mystery.

St. Giles's Archway.

A similar fate awaited the picturesque old archway, dating from before the Fire of London, that stood at the entrance of the churchyard of St. Giles', Cripplegate. When the statue to Milton was erected, some years ago, the archway was pulled down, together with a few shops on its north side, and an undertaking was given that it should be rebuilt a little further back; but the promise has remained unfulfilled for the past ten or twelve years.

Lamb's Chapel Crypt.

A relic little known to the average Londoner is the crypt to Lamb's Chapel, which is another case of successful transplanting. It formerly formed part of the hermitage or chapel in Monkwell Street, bought by one William Lamb, who died in 1577. When the chapel was removed, in 1872, the crypt was rebuilt in the disused churchyard of Allhallows, Staining, close to the ancient tower which is all that now remains of the church that formerly stood there.

Seven Dials Column.

The Seven Dials column, which once

marked the parting of the ways at that busy centre, still exists—though in a very defaced condition—on Weybridge Green. It was pulled down in 1773, on the supposition that a considerable sum of money was buried at its base, but none was found. The column was removed first to Sayes Court, Addlestone, but in 1822 the inhabitants of Weybridge acquired it and erected it as a memorial of the benevolent Frederica Duchess of York, who resided for thirty years at Oatlands, and there it remains to the present time.

Carlton House Portico.

Other relics which have changed their sites include the famous portico of Carlton House, Pall Mall, which was pulled down in 1826 and transferred to the National Gallery; Hungerford Bridge, which was superseded by Charing Cross Railway Bridge in 1862, and now forms the well-known Clifton Suspension Bridge across the Avon; and an alcove from Old London Bridge, intended in those days as a place of refuge for pedestrians and now preserved as an interesting relic in the grounds of Guy's Hospital.

Museum Relics.

Many typical bits of Old London have found a resting-place in museums, as, for example, the fine carved oak front of Sir Paul Pindar's house in Bishopsgate, which was presented by the Great Eastern Railway Company to the South Kensington Museum. Close to this beautiful old exhibit is the upper portion of the front of the house at Enfield where Keats and



TEMPLE BAR, NOW THE ENTRANCE TO SIR HENRY MEUX'S PROPERTY AT CHESHUNT, HEREFORDSHIRE.

other worthies were educated when the building was used as a school.

Transplanted Monuments.

Several of London's statues and well-known landmarks have been likewise transferred to other sites.

The Duke of Wellington's equestrian statue, which formerly made so conspicuous, if not artistic, an object on the Cumberland Arch at the top of Constitution Hill—opposite Hyde Park Corner—now enjoys comparative retirement in the Long Valley at Aldershot.

The Lion which was the cause of so many wagers when it ornamented the parapet of Northumberland House (now given place to Northumberland Avenue) has been transplanted to Zion House, Isleworth. In former days people used to bet as to which way the lion's tail pointed, whether up or down the Strand, few being able to say offhand.

The statue of Queen Elizabeth over the door of St. Dunstan's Church in Fleet Street formed one of the series of royal personages whose effigies decorated old Lud Gate, and were dethroned by the Fire.

In connection with another of the old City gates an incident may be recalled to show that so far back as 1761 the citizens had an appreciation of their worth and were anxious to preserve old relics. In that year the second gate which had been erected at Aldgate was pulled down, and a worthy gentleman with antiquarian tastes, named Mussel, bought the relic, and had it rebuilt by his house at Bethnal Green, which he then named Aldgate House.

In the Guildhall Museum will be found many unexpected treasures, and in the new London Museum the most interesting of the transplanted objects is perhaps the condemned cell from Newgate. A photograph of the door is reproduced on this page. It is an interesting relic of a building which, though intensely grim, was a magnificent piece of wall architecture—its merit as such, however, was never recognised by the general public. Newgate Prison was pulled down about eleven years ago, its site being now occupied by the Central Criminal Court.

A Real "Old London" Street.

Writing to the "Observer," Mr. Frank L. Emanuel, says: "For many years when urging, in the Press and elsewhere, the formation of a London museum (a proposal which at last was acted upon), part of my scheme consisted of the acquisition of a piece of ground on which such monuments as those referred to could be re-erected and thus saved from loss or destruction. With these buildings a real "Old London Street" could have been erected; the interiors of the houses I would have furnished with such articles as were acquired by the museum, and which pertained to the date and original purpose of each building. The educational and artistic advantages of some such arrangement over the ordinary higgledy-piggledy system must be obvious. Further, I have, before and since the establishment of the Kensington Palace show, suggested one or two suitable sites for such a street. Perhaps this idea will also fructify. . . ."

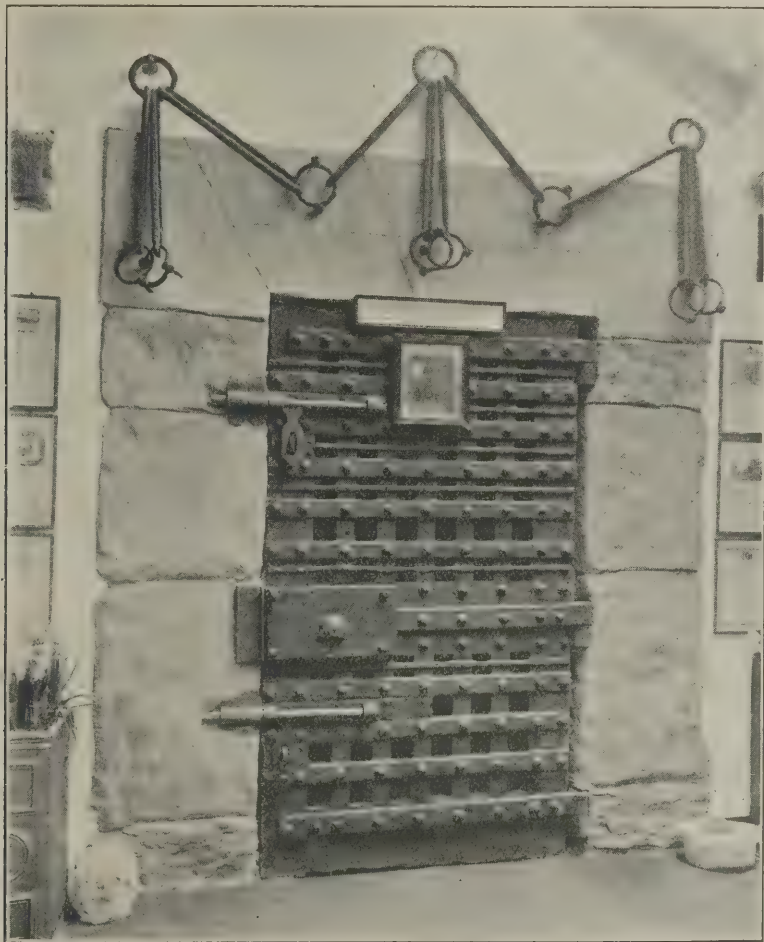


Photo: W. E. Gray.

DOOR FROM CELL IN NEWGATE PRISON, NOW IN THE LONDON MUSEUM.

BOOK NOTICES.

Mitchell's Building Construction.

The advantages of clear type and illustrations are quite minor excellencies in this useful work. A book which provides nearly 1,000 pages of useful practical information, with some 780 well-chosen and well-drawn illustrations at the almost absurd price of 6s. needs little recommendation. The price alone is an eloquent testimony to the popularity of previous editions. The matter is as good as it is exhaustive and the book is even more fitted for the office than for the classroom. Every structural subject, from concrete to electric lighting, is treated clearly and intelligently, the maximum of information being conveyed in the fewest possible words, and there is not a suspicion of "padding" from cover to cover.

The following few points might receive attention in a future edition. The factor of safety for masonry and brickwork on p. 169 might with advantage be altered from 8 to 20, and the safe stress on steel raised to $7\frac{1}{2}$ tons as in p. 454. On p. 159 the use of the term 22 inch tons to indicate 22 t. ns per square inch is somewhat confusing.

The revised Standard specification for structural steel, p. 170, was evidently published after this edition was in type, but the wind pressures on p. 288 might have been brought up-to-date, and also the method of calculating the wind pressure on a roof slope given on p. 490. A pressure of 50 lb. per foot, equivalent to a velocity of 100 miles per hour, is surely excessive.

In this connection the suggestion on p. 227 that buttresses can resist the thrust of untied principals needs correction. No ordinary buttress will resist for long the thrust of a spreading principal; the latter, even in an open hammer roof, should be independently stiff, and is so if properly constructed. The buttress merely takes the wind pressure.

The use on p. 205 of the old formula for giving the concentrated breaking weight on a small wood beam might be supplemented by the ordinary direct formula for moment of resistance. On p. 238 the length of prescriptive right to light is given as twenty years. In some cases it is of advantage to note that nineteen years and one day will secure the right.

The mechanics of raking shores (p. 421) are hardly so clear as could be desired. The efficiency of a raking shore depends primarily upon the weight of brickwork over the chat; the resistance of the wall to overturning may be almost nil. The calculations for the web of a riveted girder (p. 520) are also hardly satisfactory. The criterion of its strength is the bearing area of the main web rivets and the efficiency of the stiffeners as posts.

The efficiency of a fitch plate (p. 535) depends not, as stated, on the relative strengths of wood and steel, but on their relative stiffness. Only 132 out of 160 clauses are given of the proposed L.C.C. Regulations for reinforced concrete.

These suggested corrections, however, all refer to very minor points, and, nevertheless, both the author and the publisher are to be congratulated upon an excellent and extremely useful book.

PERCY J. WALDRAM.

* "Advanced Building Construction." By C. F. Mitchell. W. B. E. Batsford. 4½ ins. by 7 ins., price 6s. net. Seventh Edition.

Modern Sculpture.

The present popularity of sculpture is explained and justified by the examples which have been collected by Mr. Alexander Koch of works exhibited during 1909-12. On the whole, these show most convincingly that the sculpture of to-day has not only dexterity but imagination, and that he has succeeded in breaking away from the narrow conventions that in the immediately preceding generation brought the art into deserved contempt by rendering its productions destitute of all charm. The shoddy realism which went the length of making a figure exactly life size, clothing it in a frock coat and baggy trousers, and arming it with a disreputable umbrella, has died a natural death. Vigour, grace, exuberant fancy, are everywhere observable in the fifty or sixty examples of English and French work shown in this book. It is a catholic collection, representative of all the modern schools, and showing as much variety in treatment as in subject, and the general impression derived from a glance through its pages is that the modern sculptor is realising his vocation as the poet of plasticity, attempting neither more nor less than his medium allows, but yet conforming beautifully to Milton's definition of poetry—that it should be "simple, sensuous, passionate."

* Sculptures from "Academy Architecture, 1909-12," Edited by Alex. Koch, Architect. 58, Theobald's Road, London, W.C. Price 5s. 6d. net.

Surveying and Surveying Instruments.

In this third edition of "Surveying and Surveying Instruments" the author has added examples of a hasty plane-table survey, a completed traverse survey, and a tunnel survey. The chief value of the book, however, resides in its analytical descriptions and copious illustrations of the instruments, which as every surveyor knows, have strongly individual peculiarities with which, in each case, it is necessary to become familiar through actual experience. These, however, will be the better and the more quickly understood after such anatomical studies as, by means of its excellent diagrams, this useful little manual affords. The book is professedly elementary, but that, after all, is its chief justification; for in surveying, as in all scientific operations, a good groundwork of principle and theory represents almost all the help that can be given or should be required.

* "Surveying and Surveying Instruments." By G. A. T. Middleton, A.R.I.B.A. Third edition, revised and enlarged. London: Whittaker and Co., 2, White Hart Street, Paternoster Square, E.C. Price 5s. net.

Manuals of Electricity.

"Electricity Made Plain" is a popular exposition which will appeal alike to those who, "for a satisfaction of the mind," desire an intelligent interest in a subject that is everywhere thrust on the observation, and to those who require an easy approach to mechanical or professional practice. It serves either turn reasonably well, considering its size and price.—"The Practice of Electrical Wiring" is an eminently practical manual, from which even the experienced expert may derive valuable hints; and, occasionally, no doubt, they will derive from it the additional satisfaction of disagreeing with the author on points of detail. The author is evidently aware of this healthy divergence of opinion, and is therefore, it is apparent, the more frank in the statement of his own personal views as such, and not as ultimate and indefeasible axioms.—"Testing, Fault Localization, and General Hints for

Wiremen" treats upon what may be termed a localized phase of the same subject. The book is one of the "Installation Manuals" published by Messrs. Constable and Co., and is worthy of its place in this excellent series. Higher praise could hardly be given it.

* "Electricity Made Plain." By George R. Peers, A.M.I.E.E. Manchester and London: John Heywood, Ltd. Price 1s. net.

* "The Practice of Electrical Wiring." By Donald Smeaton Munro, A.M.I.E.E. London: H. Alabaster, Gatehouse and Co., 4, Ludgate Hill, E.C. Price 3s. net.

* "Testing, Fault Localization, and General Hints for Wiremen." (Electrical Installation Manuals.) By J. Wright. London: Constable and Co., Ltd., 10, Orange Street, Leicester Square, W.C. Price 1s. net.

"The Civic Engineer's Who's Who."

In the world of civic engineering personality counts for a great deal, as indeed it does everywhere; but a very special interest attaches to the men who, in a way, have our destinies in our hands, since it is they upon whom we most largely depend for the purity of our water supply, the efficiency of our sewers, and the convenience of our roads. The first issue of "The Civic Engineer's Who's Who" very agreeably places on record the professional records of some of the best known civic engineers; but it is difficult to discover upon what principle a page is allotted to one man and only three or four lines to another who is possibly of equal eminence. The list, also, is capable of very considerable extension, and when this occurs it will become necessary to render some of the notices less discursive and others more informative. The four columns or more given to Mr. John A. Brodie, City Engineer of Liverpool, cannot be begrudged him, in view of his comparatively recent appointment as Adviser to the Government of India for the laying-out of the new capital of Delhi; but, nevertheless, the contrast between this liberal allowance of space and the bald entry, for instance, "Alexander, John T., City Building Surveyor, Liverpool"—only that and nothing more—violates one's sense of proportion. But, as the editor observes in his preface, "a process of building up year by year" is necessary to the proper proportional representation that eventually will render it more valuable as a work of reference, although it will then necessarily lose its present "readable" character.

* "The Civic Engineer's Who's Who." First (1912) Annual Issue. St. Bride's Press, Ltd., 24, Bride Lane Fleet Street, E.C. Price 2s. 6d. net.

Engineering and Metallurgical Books.

Mr. R. A. Peddie, that most genial, enthusiastic and industrious of technical librarians, has prepared "a full title catalogue, arranged under subject headings, of all British and American books on engineering, metallurgy, and allied topics, published during the five years 1907-1911, with their English and American prices and publishers' names." A dryly sarcastic remark in the preface reveals the necessity for such a book as this. "The works included in this bibliography," Mr. Peddie says, "are only to be found by the laborious process of examining the various records of books published in Great Britain and the United States. Even these records are not exhaustive, some publishers failing to notify the public of the fact that they have published a book." *Quod est absurdum.* To publish is to make known. It would be interesting to know whether Mr. Peddie has discovered any instances of this masterly reticence in America, or whether the idiosyncrasy is

confined to England. At all events, the catalogue shows a preponderance of American books. For example, of more than fifty publications on reinforced-concrete, two-thirds are of American origin, and about the same relative proportions seem to be maintained in most of the other subjects; the sufficiently simple explanation being that the population of America is more than two-thirds larger than that of the United Kingdom. Another point that arises from the disparity, and that is to some extent in our favour, is that, owing to the more numerous book-buying public in America, such papers as in our country are read before institutions or published in technical journals and usually abandoned to that state are in America more frequently collected or developed into books. Mr. Peddie's bibliography renders an important service to students and professional men.

* "Engineering and Metallurgical Books, 1907-11." By R. A. Peddie. London: Grafton and Co., 69, Great Russell Street, W.C. Price 7s. 6d. net.

Common-Sense Guide-Books.

The popularity of the "Homeland Reference Books" depends partly upon their cheapness, partly upon the admirable manner in which their illustrations meet the growing regard for the garden city idea, but chiefly, perhaps, for the intensely practical character of their letterpress. The information given is systematically arranged in a well-chosen sequence, so that it is possible to ascertain at a glance the single and return fares between the place dealt with and London, as well as the season-ticket rates; how the rents of houses run, who are the local authorities, what is the price of gas, the altitude above sea-level of the district, the character of its subsoil, the educational facilities, places of worship, and recreations. To the later issues of the series there is now being added a collation of the data of various districts, enabling a useful if perhaps invidious comparison of relative values. In the brief general descriptions of places there is none of the vapid sentimentalism that used to be the besetting sin of the makers of guide-books, but definite points of interest are dealt with in baldly matter-of-fact style. "Where to Live Round London: Southern Side," presents in alphabetical order of places about a hundred descriptions of more or less delightful amenities southward of the Thames, and within a score or so of miles of it. In the same series, "Southern England" treats in the same businesslike yet not unlovely way with the coast and countryside of Kent, Sussex, Hants, and the Isle of Wight, and the volume includes informative signed articles on the south country, the cathedrals of Southern England, motoring, golf, angling, and other matters relating to the district covered.

"The Homeland Reference Books: Where to Live Round London." Southern England. Price 1s. each net, with maps. London: The Homeland Association, Ltd., Chandos Chambers, 15, Bedford Street, Strand.

The Science of Illumination.

Anything from the pen of Dr. Bloch commands the respect of students of the science of illumination, and the translation of his treatise on the subject could scarcely be in better hands than those of Professor Clinton. Illumination has made rapid strides since Dr. Bloch's work was published in Berlin in 1907, and the matter has been supplemented with notes by the translator, bringing it fully up to date. In view of the necessity for enlisting practical men in the study of a subject possessing

very little exact scientific literature, it is perhaps a matter for regret that Professor Clinton has not relegated to an appendix Dr. Bloch's somewhat terrifying mathematics elucidating the subject of spherical and hemispherical candle power, and given greater prominence to the ingenious short approximations, which are quite as correct as any actual measurement is likely to be even with modern illumination meters.

The busy men who could use their influence in the direction of reducing illumination to something more than mere rule-of-thumb and guesswork have little time and less inclination for long formulæ, and it is to be hoped that they will not fail to notice the really excellent tables of practical data to which this translation gives them access.

Several examples are given of the predetermination of illumination from given arrangements of lamps, but the practical designer would feel more confidence in the recommended methods of calculation if they had been applied to the measured results of actual examples.

The great need at the present day is for practical methods, however approximate, whereby any specified degree of illumination may be predetermined. In affording lighting engineers an opportunity of studying in English a notable step in this direction, Professor Clinton has rendered a distinct service.

* "The Science of Illumination." By Dr. L. Bloch. Translated by W. C. Clinton, B.Sc., A.M.I.E.E. London: John Murray. 8½ ins. by 5 ins., price 6s. net.

IN PARLIAMENT.

(By Our Press Gallery Representative.)

Builders' Bankruptcies in Scotland.

The Secretary for Scotland has informed Mr. Watt that the number of bankruptcies of builders in Scotland in each of the years from 1903 to 1911 respectively was: 8, 9, 10, 17, 14, 13, 10, 12, 7.

The New Delhi.

Mr. Harold Baker, on behalf of the India Office, informed Mr. King that the land scheduled under the Land Acquisition Act round Delhi included the whole area likely to be needed for the laying-out of the new capital of the Indian Empire. In laying out the area of the new capital the Town Planning Committee would, it was understood, provide for the extension of existing Delhi, but no definite scheme had yet been drawn up, as the committee had still to submit their matured proposals. The Secretary of State was in communication with the Government of India with regard to the publication of the report of the committee on the site and buildings.

Mr. King asked whether the Government adhered to the policy announced by the Under Secretary of India on the Indian Budget on July 30th last that architects for the various Government buildings of the new Delhi would be selected by competition from a wide field, and if this policy was still maintained when steps would be taken to announce the terms of the competition.

Mr. Baker replied that until the planning of the new capital had been finally settled and the requirements of the Government of India in respect of public buildings had been ascertained, the Secretary of State was not in a position to make a statement as to the selection of architects. He hoped to give effect to the principle of competition, but the subject was not free from difficulties in the special circumstances that existed at Delhi. Mr. King intimated that he would call attention to

the matter on the adjournment for the Christmas recess.

Mr. King, on another occasion, asked whether the estimate of £4,000,000 which had been made of the amount to be expended by the Government of India on the new Delhi was adhered to; and, if so, whether a statement of such estimated expense could be given, distinguishing the sums for purchase of ground, for laying out, draining and clearing the site, for building Government House, for building other Government buildings, and for fittings and furniture.

Mr. Harold Baker, in a printed answer, stated: In the course of the Budget discussion in the Legislative Council the Viceroy, on March 25th last, stated that he had good reason to believe that with proper care and supervision the sum of four millions sterling would be in the end but little, if at all, exceeded by the time the city is built. The Secretary of State is not aware of any fresh circumstance suggesting a modification of this figure, but no detailed estimates of expenditure under different heads are as yet available.

Purchase of Land for Housing.

In a printed reply to Mr. John Taylor Mr. John Burns stated that only one order for the compulsory purchase of land for housing purposes had been confirmed by the Board under the First Schedule to the Housing, Town Planning, etc., Act, 1909, viz., the Erpingham Order, parish of Edgelfield. In that case the arbitrator had awarded £382. The sum was 30½ times the gross estimated rental of the property bought. He was not, of course, aware how the sum awarded was arrived at, and whether any sum was included in it for severance or injurious affection.

Victoria and Albert Museum.

The following questions and answers relating to the Victoria and Albert Museum have been circulated in the printed notes:

Mr. Grant asked the President of the Board of Education if he would state when the repairs to the ceiling of the gallery leading to the lecture theatre of the Victoria and Albert Museum and the replacing of the flooring in that gallery, recommended by the committee in their report lately presented to Parliament, would be taken in hand; and whether the original fair-grey colouring of the walls of that gallery, to match the colouring of the twelve ornamental columns of the gallery, could now be proceeded with.

Mr. Joseph Pease, President of the Board of Education: In regard to the ceiling and the flooring of the gallery in question, steps are being taken to carry out the recommendations of the committee referred to. The question of the colouring of the walls is reserved for the present.

Mr. Grant asked what recent necessity had arisen for filling up certain of the windows with ground glass on the south side of the gallery leading to the lecture theatre in the Victoria and Albert Museum in such a way as to blot out the view of the inner quadrangle, garden, and its surrounding fine and instructive architecture; and whether, in the interests of the public and students, he would have this ground glass removed.

Mr. Joseph Pease: No ground glass has been placed in the windows in question. Some were stippled nearly two years ago for the protection of the pictures temporarily placed in the gallery; but this can be washed off at any moment if, when the future use of the gallery is decided, it is found desirable to do so.

Mr. Grant asked what use had been

made of rooms 101-106, formerly Jones Collection, in the Victoria and Albert Museum since the date when the new fire-proof roofs were completed in 1911; and how long such valuable exhibiting space was to remain closed to the public, seeing that the need for more room was referred to in the report on the Victoria and Albert Museum for 1911.

Mr. Joseph Pease: In answer to the first part of the question, the rooms referred to have been used for temporary purposes, such as the preliminary display of objects offered on loan or for purchase. With reference to the last part of the question, I hope to make a statement early next year.

Mr. Grant asked Mr. Pease whether he would cause the statement of prices paid by the Board of Education for acquisitions for the Victoria and Albert Museum to be more fully and satisfactorily given in the report of the year 1912, seeing that in the report of 1911 forty prices were only given in respect of at least 370 purchases; and would he state what principle was adopted to govern the selection of these forty.

Mr. Joseph Pease: Generally speaking, the prices of objects purchased at a cost of less than £50 have not been given in the statement. The suggestion that a larger number of prices should be given in the next report will be considered.

Mr. Grant asked what had become of the series of lunettes and panels, painted by several distinguished artists forty years ago, which decorated rooms 101 to 106 of the Victoria and Albert Museum; and what arrangements were being made for them to be on view again.

Mr. Joseph Pease: The lunettes and panels referred to were carefully stored while the alterations to these galleries were in progress, and they are now being replaced in their original positions.

LEGAL.

A Movable Porch Not an "Addition."

The case of the Mayor and Corporation of Sunderland v. Charlton came before a King's Bench Divisional Court last week, when the Corporation appealed from a decision of the Sunderland magistrates, who had refused to convict respondent for an alleged offence under the Public Health (Buildings in Streets) Act. Mr. Simey, who appeared for the Corporation, said the Act in question stipulated that no person should construct an addition to existing property without the sanction of the Corporation. Mr. Charlton had built a porch in front of his door, which projected about 6 ft. on to the pavement. The question was whether that porch was an addition within the meaning of the Act. The magistrates had held that it was not an addition, but he (counsel) argued that if it was not an addition he could not say what it was, for it was not a subtraction. Replying to the Lord Chief Justice, counsel said it was true that Mr. Charlton had built the porch on three wheels, so that it could be moved if necessary, and it was on that ground that it was argued that the building was not an addition within the meaning of the Act. The Lord Chief Justice said the question was whether the porch, being movable, was an addition. Mr. Simey said that was so. As a matter of fact, it had only been moved about 3 in. to show that it could be moved. After hearing other arguments, the Court dismissed the appeal. The Lord Chief Justice said they could not interfere.

COMPETITIONS.

*Extension of Municipal Buildings,
Glasgow.*

The assessor in this competition, Dr. J. J. Burnet, A.R.S.A., has selected from the preliminary sketch designs those of the following architects, who are invited to submit completed drawings in the final competition at an honorarium of 100 guineas each. The names are here given in alphabetical order: Mr. J. B. Fulton, A.R.I.B.A., London; Messrs. E. Vincent Harris, A.R.I.B.A., and T. A. Moodie, A.R.I.B.A., London; Messrs. P. H. Keys, A.R.I.B.A., and Dowdeswell, Beaconsfield, Bucks; Messrs. Watson and Salmon, Glasgow; Messrs. James Wright, jun., and W. J. Blain, Glasgow.

Workmen's Dwellings at Dursley.

In the competition for thirty-eight dwellings to be erected at Dursley, Gloucestershire, the successful architect is Mr. A. W. Probyn, of Gloucester, who will superintend the work.

LIST OF COMPETITIONS OPEN.

JANUARY 1, 1913.—EXTENSION OF MUNICIPAL OFFICES, DUBLIN.—The competi-

tion for the enlargement of Dublin Municipal Offices, in Castle Street, is restricted to practitioners in Ireland. The cost is estimated at £55,000, and the author of the selected design will supervise the work. Second premium, £150; third, £100. The latest date of application for conditions was December 2. Assessor, Mr. Albert H. Murray, A.R.H.A.

JANUARY 1, 1913.—APARTMENT HOUSES, BELFAST.—The Corporation of Belfast invite designs for 126 houses of two apartments each, and 126 houses of three apartments each, to be erected in Belfast. Premiums, £25, £15, and £10. Mr. Henry Seaver, B.E., Architect, Belfast; and Mr. H. A. Cutler, M.Inst.C.E., City Surveyor, will act as assessors. Conditions from the City Surveyor on payment of £1 is. (returnable).

JANUARY 31, 1913.—MUNICIPAL BUILDINGS, JAMAICA.—For an open competition, in which a premium of £100 is offered for the design of municipal buildings to cost £9,000, particulars, price 2s., may be obtained from Messrs. Young, Ltd., 60, Fenchurch Street, E.C.

FEBRUARY 3, 1913.—COUNCIL SCHOOL, HARROGATE.—The Borough of Harrogate Education Committee invite designs for

an elementary school for 675 children. Particulars, C. E. Rivers, A.M.I.C.E., Borough Engineer, Harrogate.

MARCH 1, 1913.—MUNICIPAL BUILDINGS, RANGOON.—The Committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars (£1, returnable) from the London agents, Messrs. Ogilvy, Gillanders and Co., Sun Court, 67, Cornhill, E.C.

MARCH 1, 1913.—ROYAL PALACE AND LAW COURTS.—Particulars of this competition are obtainable from the Commercial Intelligence Department, Board of Trade, Basinghall Street, E.C.

MARCH 1, 1913.—CITY HALL, WINNIPEG.—Limited to British architects in Canada. Assessor, Mr. Leonard Stokes, F.R.I.B.A.

NO DATE.—NEW CHURCH, WORTHING.—Designs are invited for a new church to be built in South Lancing, at a cost of £4,000 to £5,000. Apply to Secretary of Building Committee, Rev. E. Peel, Lancing Vicarage, Worthing.



DINING ROOM, LANSDOWNE HOUSE, BERKELEY SQUARE, LONDON.


ROBERT AND JAMES ADAM, ARCHITECTS.



COLONNADE IN THE MONUMENTAL



TAL CEMETERY, GENOA.



The general utility and economy of gas appliances is now widely recognised; daily, gas installations are taking place in innumerable houses throughout the country.

In view of these facts, architects and builders would be well advised to anticipate the requirements of tenants and purchasers by making provision for gas supply, when plans and specifications are under consideration, so that points shall be readily available when required.

The gas light is likely to be desired in all rooms; a supply pipe of adequate dimension should be laid on to all hearths; a gas-cooker in the kitchen will be a necessity; and provision should be made for gas water heaters.

By preparing for gas installation, all after-disturbance can be avoided.

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British Commercial Gas Association, 47,
Victoria Street, S.W.

ELECTRICAL NOTES.

Electric Geysers.

Up to the present the only reason why people who are paying 1d. or less per unit for electrical energy, and who are using electric lighting, cooking, and heating apparatus, continue to employ gas or coal is because they require hot water for washing. Whether a perfect electrical geyser will ever be put on the market, so as to enable such persons to dispense altogether with gas or coal, remains to be proved, but the Belling geysers, which are now described, should go a long way towards this consummation, for it is claimed that by their use at the above rate a hot bath of fifteen gallons at a temperature of 100 degrees F. can be obtained in fifteen minutes for just over 2d. This is not a large amount to pay for a bath, but the time will have to be improved, as we believe that a modern gas geyser will do better in this respect.

The geysers in question consist of a resistance ribbon which is wound on a metallic containing vessel, one face of which has a number of webs which provide a long path for the water to be heated. It is claimed that with this design a maximum heating effect and a minimum cooking effect are obtained. The geysers are made in two patterns, known as the "maze" and "spiral" types. The former is the standard pattern. The heating element in this case is entirely surrounded by water, and is secured between the two inner insulated surfaces of the body of the geyser. The perfect insulation thus obtained permits of practically instantaneous conduction of the heat to the water, so that the element can never reach much more than boiling point, and it has, therefore, a practically unlimited life. The water passes through the

two mazes in parallel streams, so that no air valves are required. The apparatus will stand a pressure up to about 160 lb. per square inch, and can, therefore, be attached to any supply system. By connecting up a series of these geysers in parallel it is possible to arrange for any desired volume of hot water at any temperature.

The "spiral" pattern has the element in two parts, one being wound on the body and one on the central delivery tube. The supply enters at the top through a water jacket which surrounds the whole geyser and passes to the bottom of the spiral channel, through which it then rises until it reaches the top, when it falls through the central tube to the outlet at the bottom, so that the geyser is always full. An air valve is provided to prevent air locks. An efficiency of 95.8 per cent. can be obtained with this pattern, which is greater than that with the "maze" pattern, but it must be used in the vertical position. In both patterns the control is foolproof, and only one switch handle is provided, which gives cold, hot, or boiling water as desired. This handle also turns on the water, so that it is impossible to have the current on without the water, and the resistance elements can, therefore, not be burnt out. The overall projection of the geysers is only 5 in. and the other dimensions are 16 in. each way, so that it is apparent that the apparatus takes up very little room compared with the bulky gas geyser.

Reflected Lighting.

A great deal has recently been printed in technical journals regarding indirect methods of lighting, the exponents (and incidentally salesmen) of various methods or designs of fittings having contributed long

and discursive articles praising their own particular goods and abusing those of their opponents. Without wishing to show any decided preference, it is impossible not to feel that those who advocate arc lighting have the best of the argument, at any rate so far as applied to large spaces. Of course, it must be understood from the beginning that indirect lighting must always be more expensive than direct lighting, because of the large amount of light absorbed even by white ceilings. But most excellent results can be obtained by inverting a holophane reflector, painting the outside dark, and using a few standard and inexpensive accessories for hanging up the arrangement. Even a couple of ordinary opal shades arranged upside down in tandem, with the lamps between, will give a most pleasant effect. It will, no doubt, not be long before some enterprising maker of fittings will put on the market some designs for indirect lighting at reasonable prices.

New Water Supply for Fraserburgh.

The new water supply for the town of Fraserburgh has been formally inaugurated. The work involved an expenditure of £52,000. A reservoir containing about sixty-five million gallons of water, and covering about twenty-five acres of ground, has been constructed in the Federate district, whence the water is conveyed into a service reservoir at Bogenhourie. This reservoir is capable of containing half a million gallons, and acts as a clear-water tank for the mechanical filters adjoining. The filters, which were constructed and installed by Messrs. Mather and Platt, Ltd., of Manchester, are capable of treating 500,000 gallons per twenty-four hours. The water is conveyed from the clear-water tank to the town of Fraserburgh.

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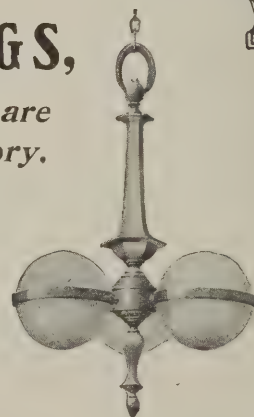
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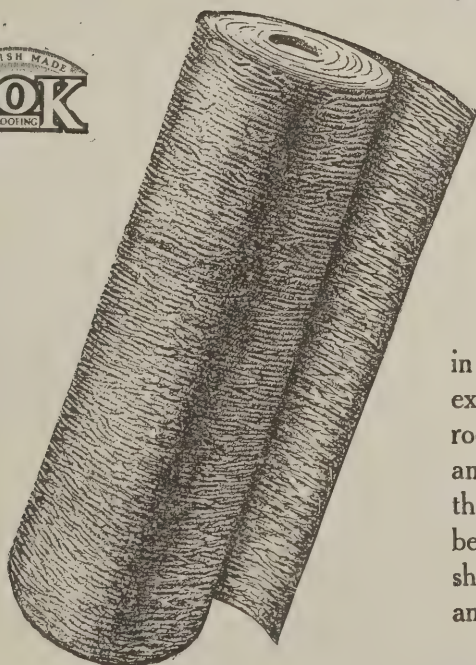


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ELECTRICAL NOTES.

Ferranti Heating and Cooking Apparatus.

In a recent issue we described some of the Simplex novelties in connection with electrical heating and cooking. As the present is the period when the wholesale and trade houses begin to think of purchasing goods for the coming winter season, we offer no excuse for reverting to the subject again, dealing this time with the manufactures of Messrs. Ferranti, Ltd., Hollinwood, Lancashire. Those who remember the early days of electric lighting may recollect that Mr. S. Z. de Ferranti was associated with an electric generating station at the Grosvenor Gallery, and subsequently he was engineer to the London Electric Supply Company, in connection with their large station at Deptford. It was he who first introduced the system of high voltage transmission, but his ideas, being in advance of the times, were then slighted. Now he has the satisfaction of seeing them applied in all parts of the world. He has just completed the second year of the presidency of the Institution of Electrical Engineers, having been re-elected as a compliment to the boldness of his ideas and the initiative which he gave during his first year to the policy of the Council.

To turn, now, to the electrical heating and cooking apparatus, which were referred to briefly in these notes last autumn, on the occasion of the Electrical Exhibition: the company has developed this department since that time, and one of the chief factors in their apparatus is solidity. It is only necessary to see the articles in order to appreciate the fact that they are made by engineers. The basis of all such apparatus is the heating element, and in

this respect Messrs. Ferranti appear to have evolved an efficient and durable unit. It consists of a flat spiral of "Michrome" ribbon, which is mounted in the various apparatus in such a manner that practically all the heat is transferred to the effective surface and very little is radiated. This element is guaranteed for two years, and is interchangeable and easily fitted.

Amongst some of the apparatus listed may be mentioned the 4-lb. and 6-lb. irons, finished in polished nickel, which are ready for use two minutes after switching on, the heat being distributed evenly over the working surface and the upper half remaining cool. These irons consume one unit in four hours. The Ferranti Disc Stove, for boiling, grilling, and toasting, is intended to replace the gas ring. It consumes 850 watts, weighs 6 lb., and will boil one pint of water starting with stove cold in six minutes, and with stove hot in three minutes. The Ferranti Pyramid Disc Stove is similar to the one just described, but weighs 17 lb., and is intended for bedroom as well as kitchen use. The Ferranti Rectangle Disc Stove is intended for general kitchen service. The heater disc first described is countersunk and flush with the main plate, so that two or three utensils can be treated at once and placed half-on for simmering. The weight is 13 lb.; in other respects it is similar to the foregoing. The Ferranti Duplex Disc Stove is an accessory to an electric oven and has two countersunk discs, one for 800 and the other for 400 watts, with separate controlling switches. The weight is 70 lb., and, of course, the small heating disc takes twice as long to boil water as the large one. Ordinary utensils can be used with all these discs, but a special line of aluminium accessories, with absolutely flat bottom surfaces, are recommended to give the best results.

As regards the Ferranti Electric Fires, a similar heating element is placed in the centre of a large metal reflector, which serves to radiate the heat and, at the same time, form the nucleus of an ornamental design. For these purposes the element is covered by a quartz disc, which is raised to a high temperature and glows at a bright red heat, which is so intense that a wire guard is provided when required to prevent inflammable substances from coming in contact with it. These fires are finished off in a variety of designs, and have a very attractive appearance. They may be employed, also, for making toast, grilling by means of a Dutch oven, and boiling water. In the last case the reflector must, of course, be turned into the horizontal position. The consumption is 1 unit per hour, and the weight 18 to 25 lb.

In conclusion, all those who are interested seriously in ironclad switches and fuses, motor starters, and, in fact, switchgear of all kinds, should write for the remarkable catalogue which Messrs. Ferranti have built up of loose leaves. Everything that is possible in the controlling line has apparently been carefully thought out, designed, and standardised. The catalogue, besides being beautifully illustrated and printed and provided with dimensioned sketches, diagrams, code words, weights, etc., for practically every article, is a veritable mine of information, and a text-book on the apparatus listed therein.

Mr. William Matthias, builder and contractor, of Cardiff, died on July 1st, aged sixty-five. He leaves, besides a widow and daughter, two sons who are builders' merchants, trading as Messrs. Matthias Brothers.

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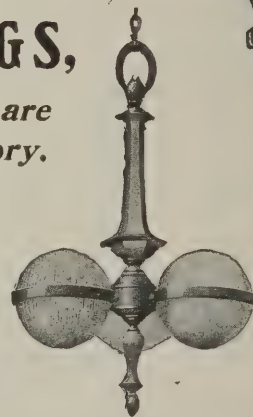
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Leeds.—Accepted for alterations to market hall, for the Markets Committee. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds. W. H. Dews and Co., Skinner Lane, Leeds, £1,173 14s.

Leyton.—For erection of a girls' and infants' school and alterations to the present school at Church Road, for the U.D.C.:

Strand Building Co., Strand, W.C.	£16,352	0	0
Brand, Pettit, and Co., South Tottenham	15,510	0	0
Lawrance and Son, City Road, N.	15,397	0	0
H. F. Webb and Co., Walthamstow	15,372	0	0
Davey and Armitage, South-end-on-Sea	15,138	0	0
Manders and Co., Leyton	14,868	8	10
F. J. Coxhead, Leytonstone	14,442	0	0
A. E. Symes, Stratford	14,430	0	0
Clark and Sons, Cambridge	14,393	12	3
J. F. Wilmott, Iford	14,380	0	0
H. O. Horswill, Forest Gate	14,230	0	0
W. J. Maddison,* Canning Town	13,629	0	0

* Accepted

London.—Recommended for acceptance for erection of iron buildings on the following sites in connection with provision for temporary elementary school accommodation, for the London County Council:

Ashburnham Road.			
J. McManus, 237, Hammer-smith Road	£2,929	0	0
J. McManus, Abbotshall Road.	2,070	0	0
J. Harrison and Co., Fieldgate Street.	897	0	0
J. McManus, Derinton Road.	2,656	0	0
J. McManus, The "Furzedown."	1,355	0	0

London, E.C.—For the erection on the site of 42, Rosebery Avenue of an extension of the Clerkenwell fire station, for the London County Council:

J. Marsland and Sons, Walworth, S.E.	£8,037
Holloway Bros. (London), Ltd., Lambeth, S.E.	7,900
Leslie and Co., Ltd., Kensington Square, W.	7,749
G. Godson and Sons, Kilburn Lane, W.	7,741
W. Johnson and Co., Ltd., Wandsworth Common, S.W.	7,590
W. Lawrence and Son, Finsbury Circus, E.C.	7,570
H. L. Holloway, Deptford, S.E.	7,400
J. and C. Bowyer, Ltd., Upper Norwood, S.E.	7,297
Patman and Fotheringham, Ltd., Park Street, N.	7,293
Kerridge and Shaw,* Sturton Street, Cambridge	7,117
Architect's estimate, £7,183.	
* Recommended for acceptance.	

London, S.E.—For erection of the extension of the Camberwell car shed and sub-stations, for the London County Council:

J. Mowlem and Co., Ltd., Westminster, S.W.	£33,113	0	0
Holland and Hannen, Bloomsbury, W.C.	31,500	0	0
H. L. Holloway, Deptford, S.E.	31,345	0	0
F. and H. F. Higgs, Herne Hill, S.E.	30,970	0	0
C. Wall, Ltd., Lloyd's Avenue, E.C.	30,792	0	0
W. Downs, Walworth, S.E.	30,349	0	0
E. Lawrance and Sons, Ltd., City Road, N.	30,187	0	0
Rowley Bros., Wood Green	30,113	0	0
Kerridge and Shaw, Cambridge	29,405	0	0
J. and C. Bowyer, Ltd.,* Upper Norwood, S.E.	28,954	7	4
Architect's estimate, £29,389.			
* Recommended for acceptance.			

London, W.—For the erection of 153 additional cottages and administrative buildings on the second part of the western section of the Old Oak Estate, Hammersmith, for the London County Council:

F. and T. Thorne, Isle of Dogs	£46,874
A. Roberts and Co., Ltd., Kensington	41,863
Nicholls and Son, Finchley	41,434
G. E. Wallis and Sons, Ltd., Westminster	41,212
F. and H. F. Higgs, Herne Hill	41,055
F. J. Coxhead, Leytonstone	40,655
A. Monk, Lower Edmonton	39,976
Rowley Bros.,* Wood Green	38,697
Architect's estimate, £38,600.	
* Recommended for acceptance.	

Pontefract.—Accepted for erection and completion of the Crosskeys Hotel, stables, boundary walls, etc., Pontefract, for Beverley Bros., Ltd., Eagle Brewery, Wakefield. Garside and Pennington, Architects, Ropergate, Pontefract. Quantities by Garside and Pennington.

W. Holner, Northgate (brick and stone work)	£1,365	10	0
D. Jackson and Sons, Northgate (joiners)	331	10	0
W. H. Keighley, Corn Market (plumber and glazier)	235	10	0
T. W. Senior, Walkergate (plasterer)	63	10	0
W. P. Allison, Castleford (slater)	80	0	0

Pontypridd.—Accepted for proposed new church and institute at Pontypridd, for the Glamorgan Mission to the Deaf and Dumb. E. Rees, Architect and Surveyor, Alexandra Chambers, Taff Street, Pontypridd:—
E. Jones and Sons, Pontypridd £1,714

St. David's (near Llandyssul).—Accepted for erection of a new Council school at St. David's, near Llandyssul, for the Cardigan County Education Committee. G. Dickens-Lewis, M.S.A., County Architect, Abersytwyth.
J. Evans, Talgarreg £1,525
W. Davies, Llanybyther 1,195
(Tenders continued on page xvi.)

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Southall (Middlesex).—Accepted for construction of an open-air swimming bath, for the Southall-Norwood Urban District Council. R. Brown, A.M.I.C.E., F.S.I., etc., Engineer:—
Hanson, Southall £1,555
Engineer's estimate, £1,500

Thrybergh (Rotherham).—Accepted for the erection of a caretaker's house at Thrybergh School for the West Riding C.C. Jno. Stuart, Architect:—
W. M. Beeden, Thrybergh £272

Thrybergh (Rotherham).—Accepted for the erection of a motor garage and alterations to stables for Dr. J. E. Adam. James Totty, Architect, Rotherham.
W. M. Beeden, Thrybergh £226

Thurcroft (Rotherham).—Accepted for the erection of two villas for the Rothervale Collieries Co., Ltd.:—
W. M. Beeden, Thrybergh £740

Tottenham.—Accepted for erection of five shops along the Lordship Lane frontage of the White Hart Lane estate, Tottenham, for the London County Council:—
Rowley Bros., Wood Green £3,236
Addition for steel and concrete floors £55.
Architect's estimate, exclusive of addition for concrete floors, £3,620.

Wickersley (Rotherham).—Accepted for alterations to property, etc. H. L. Tacon and Son, Architect.
W. M. Beeden, Rotherham.

TOWN PLANNING OF ROSYTH DISTRICT.

A conference has taken place in the Corporation Buildings, Dunfermline, between the Town Planning Committees of Dunfermline and Inverkeithing Town Councils to discuss the desirability of town planning the Inverkeithing area in conformity with the area of Dunfermline and of having one expert for both schemes. It is understood that 6,000 houses, estimated to accommodate a popu-

lation of 30,000, will require to be erected within the next six years. The North British Railway Company are, it is believed, to be approached immediately in regard to the provision of a station on the main Edinburgh to Perth line. The point which has been spoken of as the site of the station is the Pitreavie estate, near the heart of the new territory, and where the line crosses one of the two highways which intersect the new line from north to south.

PROPOSED NEW MUNICIPAL WORKS.

The Local Government Board have decided to hold, or have already held, as the subjoined dates may indicate, inquiries into proposed expenditure by public bodies as follows: Water Supply.—Ulverston Rural District Council, £1,000 (July 26); Petersfield Urban District Council, £1,878 (July 23). Sewerage, Sewage Disposal, Drainage, etc.—Ambleside Urban District Council, £4,834 (July 25). Street Improvements, Recreation Grounds.—Ryton Urban District Council, £1,166 (July 23); Bromley Borough Council, £4,880 (July 26); Epsom Urban District Council, £1,440 (July 23); Caerphilly Urban District Council, £1,290 (July 23); Ilford Urban District Council, £1,220 (July 25); Carlton Urban District Council, £4,200, including fire station (July 25). Various.—Heckmondwike Urban District Council, laying out burial ground, £2,017 (July 24); Epsom Urban District Council, electricity undertaking, £4,221 (July 23); East Ham Borough Council, fire station, £8,628 (July 24); Ludlow Borough Council, burial ground, £4,300 (July 26); Merthyr Tydvil Borough Council, cemetery exten-

sion, £1,000 (July 24); Hereford City Council, market hall repairs, £1,000; electricity services, £1,000 (July 25). Town Planning and Housing.—Birmingham City Council, no amount specified (July 25); Rhymney Urban District Council, £6,800 (July 25); Saddleworth Urban District Council, £16,000 (July 25); Annfield Plain Urban District Council, £14,400 (July 23); Featherstone Urban District Council, £35,745 (July 24); Dursley Rural District Council, no amount specified (July 24).

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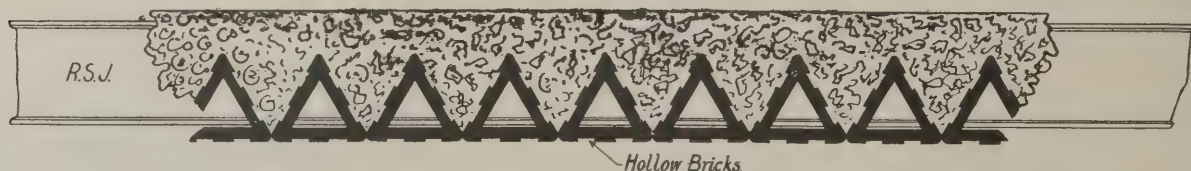
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LIST OF COMPETITIONS OPEN.

AUGUST 30. SAXON SNELL PRIZE.—Fifty guineas, with medal, for essay on hospital construction. Apply, Sanitary Institute, 90, Buckingham Palace Road.

SEPTEMBER 1. MUNICIPAL OFFICES, GOOLE. Premiums, £30 and £15. Particulars, Mr. R. Tyson, Council Offices.

SEPTEMBER 9. COUNCIL SCHOOL, CHORLEY.—The Education Committee of the Borough of Chorley invite designs for a Council School for about 500 children. Conditions (£2 2s., returnable) from John Mills, Town Clerk.

SEPTEMBER 30. NEW BUILDINGS, UNIVERSITY COLLEGE, DUBLIN.—The Governing Body of the University College, Dublin, invite architects to submit designs for new college buildings. Competition is limited to architects living and practising in Ireland. Mr. H. T. Hare, F.R.I.B.A., has been appointed the assessor. Applications, accompanied by a cheque for two guineas (returnable), to J. W. Bacon, M.A., Secretary and Bursar, 86, St. Stephen's Green, Dublin.

OCTOBER 14. PUBLIC SWIMMING BATH, BALHAM, S.W.—Wandsworth Borough Council invites designs for a swimming bath to be erected at Balham. Conditions, schedule of accommodation, and plan of site may be obtained from Mr. P. Dodd, M.Inst.C.E., 215, Balham High Road, S.W., on deposit of £1 is. Designs to be sent to Mr. D. A. Nicholl, Town Clerk, Council House, Wandsworth, S.W.

OCTOBER 29. EXTENSION OF MUNICIPAL BUILDINGS, GLASGOW.—The corporation invite preliminary sketch designs for an ex-

tension of their municipal buildings. From the sketches submitted, the authors of not more than five designs will be selected for a final competition, at an honorarium of one hundred guineas each. Mr. John J. Burnet, LL.D., A.R.S.A., is assessor. Conditions (one guinea, returnable) from J. Lindsay, Town Clerk, City Chambers, Glasgow.

OCTOBER 31. TOWN PLANNING, HUDDERSFIELD.—The Housing and Town Planning Committee of Huddersfield Corporation offer premiums of 100, 50, and 25 guineas for laying out certain areas. Conditions (two guineas, returnable) from K. F. Campbell, M.Inst.C.E., Borough Engineer, 1, Peel Street, Huddersfield.

NOVEMBER 1. KING EDWARD MONUMENT, OTTAWA.—Sketch models, in plaster. Particulars, Secretary, Public Works Department, Ottawa.

JANUARY 1, 1913. MUNICIPAL BUILDINGS, RANGOON.—The committee of the Municipality of Rangoon, Burma, invite architects to a competition for the designing and supervising of new municipal buildings. Premiums, £300, £200, and £100. Supervision may be delegated to a local firm of architects. Particulars £1 (returnable) may be obtained from the London Agents, Messrs. Ogilvy, Gillanders, and Co., Sun Court, 67, Cornhill, E.C.

BREVITIES.

It is more than thirty years since the Corporation of Derby began to acquire property with the view to erecting a new town hall; but now, on a motion being brought before the corporation with the

object of taking definite steps towards the fulfilment of that aspiration, it has been defeated, and an amendment postponing the matter for two years has been carried by a substantial majority.

The Public Works Loan Commissioners have agreed to advance the £6,875 required by Thetford Town Council for the erection of dwellings under the Housing Act. Mr. Stanley J. Wearing, A.R.I.B.A., is the architect for the scheme.

A "Lord Masham and Riddall Memorial Hall," to cost about £3,000, is to be built at Masham, Yorks. Mr. Houfe, of Harrogate, is the architect.

Rapid progress is being made with the new buildings at Yorkhill in connection with the Royal Glasgow Sick Children's Hospital. Messrs. John J. Burnet and Son are the architects, with Dr. Macintosh, M.V.O., as advisory medical expert.

At the recent quarterly meeting of the County of London Justices, at London Sessions, reference was made to the decision of the London County Council to rebuild the present court-house in Newington Causeway, at a cost of £100,000. Apparently the justices would prefer the King's College Hospital site; but the London County Council seems to have determined on the Newington Causeway site, where, it was announced, building would begin in November or December next, unless opposition came from the Home Secretary.

Marsden Miners' Hall, South Shields, which has just been opened, has been built by Mr. David Glen, of Jarrow, from the designs of Messrs. T. A. Page and Son, architects, South Shields. The main hall will accommodate 600 persons.

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- New Sessions Court, Blackburn.
- Briggs, Wolstenholme & Thornely, F.F.R.I.B.A.
- Stones, Stones & Atkinson, Architects, Blackburn.
- Woolwich and Stockport Town Halls. Sir A. Brumwell Thomas, F.R.I.B.A., Architect.
- Liverpool Town Hall.
- Stoke-on-Trent Town Hall. J. A. Bowden, M.S.A., and Thomas Wallis, M.S.A., Joint Architects, London.
- Longton Town Hall. J. H. Beckett, Esq., A.R.I.B.A., Architect, Longton.
- South Shields Town Hall. E. E. Fetch, Esq., A.R.I.B.A., Architect.
- London Opera House. Vestibule, Entrance Hall, Foyers and Saloons, for Oscar Hammerstein, Esq.
- Portsmouth Hippodrome.
- Bedminster Hippodrome.
- Tivoli, Liverpool.
- Empire, Burnley.
- New Princes Theatre, London. Bertie Crewe, Esq., Architect.
- His Majesty's Theatre, Manchester. Horace Farquharson, Richardson & Gill, Architects, London.
- Repertory Theatre, Liverpool. Prof. Adshead, A.R.I.B.A., Architect.
- Gilmour Hall, Liverpool. Professor Reilly, A.R.I.B.A., Architect.
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- New Grand Theatre, Pentre.

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Information from accredited sources should be sent to "The Editor," at latest by noon on Saturday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Cork.—Accepted for erection of the doctor's residence, for the Joint Hospital Board:—J. Buckley, 4, Boyce's Street, Cork, £1,835 8s. 11d.

Fermoy.—For sundry additions and alterations to residence, Cregg Olympry, Fermoy, co. Cork, for Mr. F. J. W. Lucas. Mr. W. F. Maye, C.E., Architect, Fermoy:—
D. Kellaher, Cork £1,200
D. Creedon, Fermoy 1,025
Meagher and Hayes, Cork 1,010
T. O'Mahony, * Fermoy 1,005
*Accepted.

Hingham.—Accepted for erection of six double cottages at Hingham, for the Forehoe R.D.C.:—H. O. Tofts, Hingham, £1,054 16s. 6d.

Horley (Surrey).—For erection of a bungalow on Park Hill Estate, Horley, Surrey, for E. Gray, Esq., Blunden Shadbolt, Lic.R.I.B.A., Architect, Horley, Surrey:—
T. Wickens £372
W. Laker 338
E. S. Mitchell* 335
*Accepted.

Horley (Surrey).—For erection of a house on Park Hill Estate, Surrey, for A. J. Hart, Esq., Putney, Blunden Shadbolt, Lic.R.I.B.A., Architect, Horley, Surrey:—
J. J. Pink £848
A. King and Sons 820
T. Wickens 792
E. E. Mitchell* 742
*Accepted with revisions.

Horley (Surrey).—Accepted for erection of a house in Meath Green Lane, Horley, for E. C. Bosse, Esq., B. Shadbolt, Lic.R.I.B.A., Architect, Horley:—A. Peskett and Co., Crawley, £215.

Horley (Surrey).—Accepted for pulling down and re-erecting four greenhouses at Victoria Road Nurseries, Horley. B. Shadbolt, L.R.I.B.A., Architect, Horley:—Stacey, Horley, £160.

Leagrave.—Accepted for erection of a school at Leagrave and Limbury, for the Education Committee:—O. P. Drever, Kettering, £3,379 17s.

London, N.E.—For erection of a new police section house at Dalston. Mr. J. Dixon Butler, F.R.I.B.A., New Scotland Yard, S.W., Surveyor. Quantities by Messrs. Thurgood, Son, and Chidgey, 8, Adelphi Terrace, Strand, W.C.:—

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Merthyr Tydfil.—For erection of an administrative block at the workhouse, for the Guardians:—

J. Jenkins, Canal Wharf ...	£4,131	10	0
D. Jones, Dowlais	3,865	0	0
J. Williams and Son	3,725	0	0
Merthyr	3,715	0	0
J. T. James, Penydarren... ..	3,698	18	7
J. Morgan and Son,	3,314	9	11
Aderdare			
Warlow and Warlow,*			
Merthyr			

Neepsend.—Recommended for acceptance for extension to the engine-room at the Neepsend power house, for the Sheffield City Council:—Abbott and Bannister, £6,750.

Pyrford (Surrey).—Accepted for erection of a house on Pyrford Green Estate, near Byfleet, Surrey. B. Shadbolt, Lic.R.I.B.A., Architect, Horley, Surrey:—G. W. Robins, £756.

Salford.—Recommended for acceptance for alterations and additions to the town hall, for the Corporation:—J. Gerrard and Sons, Ltd., £2,042.

CARRYING BAGLESS CEMENT.

Cement in bulk has recently been shipped by the Universal Portland Cement Company from its plant at Buffington to the block and sewer pipe factory of the Pennsylvania Coal and Supply Company at Milwaukee. The shipment was a car-load lot and the cement arrived at its destination without any signs of loss or damage, being apparently in the same condition as when it left the mill. The cement was taken out with shovels into wheelbarrows and this operation is stated to have caused no more dust than the handling of cement in sacks. Some of it was wheeled directly to the mixing plant of the purchaser and the rest was stored in a bin. The Universal Portland Cement Company has reached the decision that if it is possible to dispense with a 40-cent package for 70 to 80 cents worth of cement the industry will be well served. Materials little, if any, less subject to damage and much more valuable are shipped in bulk in box cars, and it is by no means improbable that bulk shipments will be found desirable in the cement industry before long where the facilities at the receiving end warrant this method of transportation. The experiment is one well worth trying elsewhere. Engineers may raise some objections to the delivery of cement in this way on account of its novelty, but on large construction work the saving in price will be sufficient, in all probability, to permit the contractors to provide special arrangements for unloading and receiving the shipments in such a way as to prevent any deterioration in their quality.

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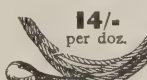
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ELECTRICAL NOTES.

"The Electrician" Wireman's Pocket Book.

We have received from "The Electrician" Printing and Publishing Co., Ltd., a copy of this book (5s. nett), by Messrs. A. W. Robinson and W. E. Warrilow. Mr. Robinson is publicity manager and buyer to Simplex Conduits, Ltd., whilst Mr. Warrilow is advertisement manager of "The Electrician" newspaper. Hence, it may be considered that the authors are fully qualified to deal with the subject, and a perusal of the "Pocket Book" bears out this assumption. It is six years since the work was revised, and the third edition, which is now issued, has brought the subject of wiring fully up to date. The book is arranged in six divisions, dealing respectively with wiring, lighting, country house plant, motors, wiring rules, and tables. The first two divisions are split up into several sections, each section having many sub-sections, and the whole is well indexed.

The Wiring (Division I.) commences with a lucid exposition of circuits for lighting installations and then starts right away on systems of electric wiring. Steel conduits and their wiring are dealt with exhaustively, wooden casing receives more attention than is usually given to it by the modern carpenter, and the "Kalkos" and "Stannos" systems are described.

Newer systems, such as the Woodhouse bonded steel casing, Henley's, and cable sheathing receive a place, and there are some useful notes on lead-covered wiring, temporary wiring, and open wiring. Electric light cables are described at length, with some useful illustrations for jointing, and a large number of valuable tables. The section on fuses gives

great prominence to the cartridge type, which is so rapidly superseding the ordinary bare fuse wire, and also contains some interesting and practical tables. Another section contains estimates for house-wiring, which, however, should only be used as a guide and not to base actual estimates on. The division ends with sections on testing meters, and wiring for bells, burglar alarms, and telephones, all well described and clearly illustrated.

However, Division II. is really the most important, especially the section on illumination, which should be read and kept as a work of reference by all who are interested in this very difficult question. Here we find useful data regarding the illumination of residences, schools, libraries, and many other situations requiring special treatment. The division closes with some notes on the uses of arc lamps.

Hardly less useful than the previous division is No. III., where we find some valuable information regarding oil engines for country house lighting. As the authors point out, since the introduction of the metal filament lamp, the utility of such plants has been amply demonstrated and there is a very wide field for the contractor to work, a field which may be said to have hardly been touched yet, because these small and inexpensive plants need not be restricted only to country houses, but may be applied, as portable plants, for all sorts of purposes, in districts where there is no electric supply. Such recent improvements as the "Bruston" automatic plant and the "Walter Horrocks" automatic plant are described, as well as typical petrol and paraffin engines of many kinds. Suction gas engines find a place, and this plant should be more widely known than it is, whilst the division

closes with some notes on storage batteries and their maintenance. These two divisions, Nos. II. and III., are of the greatest value to all architects who are interested in any way in the questions of lighting, illumination, and isolated plants.

Division IV. is more technical, in that it deals with electric motors, their uses, and rules for efficient running, whilst Division V consists, as stated before, of wiring rules, and is therefore, more for occasional reference than for information. Division VI. closes the book and contains tables of weights, measures, etc., electrical formulæ, wages tables, rules for dealing with shock, etc. The whole is well and clearly printed on thin, tough paper, profusely illustrated, and bound up in a long, narrow form suitable for carrying in the breast pocket. Certainly, this is the most useful book of its kind which has appeared, and nobody who has anything to do with the practical side of wiring in any form should be without it.

"Terroid" Wiring.

This is yet another system of wiring, introduced by the Western Electric Company. It consists of an insulated conductor, to which is attached a return conductor, either of low or no insulation, in such a manner that it can readily be detached when necessary, such as for running to switch points, entering leading-in holes of fittings and accessories, etc. This return conductor is "earthed" when installed and all the standard fittings and accessories can be employed, whilst no special tools are necessary. It is claimed that by the "Terroid" system 20 per cent. may be saved in a steel conduit system and 40 per cent. in an open wiring system, compared with the use of two separate insulated wires.

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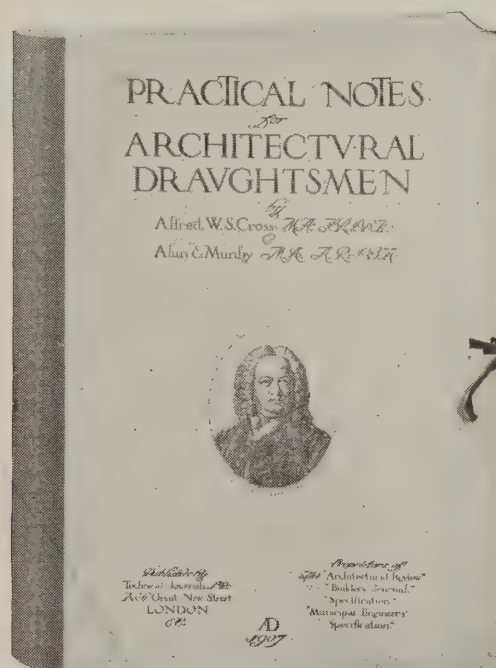
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Millions of pounds are spent each year in buildings carried out to the designs of architects. Many important commissions are gained in open competition by the men who have ability, not only to plan and design, but also to express their ideas effectively and correctly by their draughtsmanship. It is not enough to have knowledge. The architect has to exhibit his knowledge by his drawings. "Practical Notes" contains a mass of valuable information, for quick and ready methods of work, etc., carefully drawn examples and the canonical proportions and rules for design and detail found by experienced and qualified men to be the best, collected and arranged for easy reference.



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LIST OF PLATES CONTAINED IN PORTFOLIO.

PART I. THE ORDERS AND THEIR APPLICATION.

- Plate 1. Introduction.
- " 2. The Four Orders.
- " 3. The Tuscan and Doric Orders in detail.
- " 4. The Ionic and Corinthian Orders in detail.
- " 5. Details of Imposts and Arch Moulds.
- " 6. Order upon Order and Intercolumniation.
- " 7. Doorways and Pediments.
- " 8. Windows and Entablatures.
- " 9. Windows, Rusticated Treatment.
- " 10. Venetian and other Windows
- " 11. Niches and their Treatment.
- " 12. Block Cornices, Balusters Entablatures, and Entasis.

PART II. DETAILS OF THE ORDERS.

- Plate 13. Rules for Setting out the Volutes of the Ionic Capital by (1) Gibbs, and (2) Vignola and Palladio.
- " 14. Details of Ionic and Corinthian Capitals.

PART II.—(continued).

- Plate 15. Examples of Arcading (Ionic and Doric).
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PART III. CONSTRUCTIONAL DETAILS.

- Plate 17. Domes.
- " 18. Pendentives, Circular Staircases, and Wreathed Columns.
- " 19. Gothic Tracery and Vaulting

PART IV. PERSPECTIVE.

- Plate 20. Notes on Architectural Perspective.
- " 21. Setting up a Perspective.

PART V. SHADOWS.

- Plate 22. Explanatory matter regarding the projection of Shadows.
- " 23-27. Examples illustrating Shadows on various architectural details.

ELECTRICAL NOTES.

Reinforced Concrete for Electrical Purposes.

In a recent issue of "L'Industrie Electrique" there appeared an article dealing with the above subject as relating to conduits, wires, etc., switchboard work, and reinforcement of wooden poles. We believe that these applications are new to this country, where the first class of articles are generally made of earthenware or iron, the second of slate or marble, and the third dispensed with altogether, although it may be useful in tropical countries. Nevertheless, the subject is of considerable interest.

For conduits and boxes the construction of the forms is very simple, and in the case of switchboards the system is applicable to high-tension cellular construction, where it is necessary, on account of space, to make the walls as thin as possible. Either Expanded Metal may be employed, the panels being cut the size of the walls of the cells, or else small iron sections may be used and built up as required. However, a simpler method is to use machine-made standard frameworks of rectangular shape, so that the switchboard can be built up promptly *in situ* without the labour of cutting and fitting. The frameworks are cemented and delivered in slabs and can be fitted together in a manner similar to the dovetailing of joinery.

When building up skeletons the difficulty of joining contiguous sections has to be considered. The use of annealed iron wire needs to be carefully and neatly carried out and requires skilled labour, but it must be employed where the various parts are constructed on the job. On the other hand, a "centrator" clip may be used

with advantage if ready-made frames are employed. These clips, which are made of steel wire, are bent over the wires or rods of the structures, crossing each other at right angles in such a manner that these are held rigidly in position.

Reinforced concrete may be employed for strengthening telegraph, telephone, or power-transmission poles at the ground level where they have rotted without removing the pole or disturbing the surface. One method is to fasten a helix of steel wire on to the base of the pole by presenting it horizontally to the pole and springing one end on. The helix is then turned round in such a sense that the whole is worked rapidly on to the pole. It is then strengthened by vertical frames, screwed to the pole, the entire construction being surrounded by a two-part mould and cement then run in.

Of course, all the operations involved in the processes described require a certain amount of skilled labour, neatness, and care, but with ordinary precautions in most cases and special precautions in special cases the results are claimed to be very successful.

Wireless Indirect Lighting Fittings.

Messrs. Simplex Conduits, Ltd., have placed on the market a new series of fittings, which present all the advantages of the expensive fittings of this class, for a reasonable price and without any internal wiring. Each fitting comprises a top reflector in the shape of a hollow inverted cone with curved sides and with a hook in the centre. This hook is attached to a metal rod, which passes through the apex of the cone and is fitted with a cluster of three, four or five lights dipping into a bowl of special design. The rod passes through this bowl also and is secured on

the underside by a nut. Both reflector and bowl are of opal glass; the latter is so shaped as to conceal the lamps themselves from the eye, whilst it directs the light to the reflector. As a result, there is a certain amount of diffused light transmitted through the bowl and of reflected light distributed by the reflector, so that the effect is in all respects pleasant and restful. It is only necessary to connect existing wires to the two terminals provided at the top of the fitting, which are invisible. These fittings are made for 3, 4, and 5 50-candle-power lamps of pear shape, and 3 and 4 100-candle-power lamps of round shape, the overall dimensions varying from 19½ in. diameter and 18 in. high to 22 in. diameter and 20 in. high.

Builders and Wiring.

Writing under this heading, the "Electrical Times and Lighting" observes that it is becoming the usual thing for speculative builders to make arrangements with a local contractor to wire all their houses in carcass as they are erected. Some builders of a cautious or Scotch turn of mind will neither pipe their property for gas nor wire it for electric light until the prospective occupier has signified which he prefers. The owner will then equip the house for gas or electricity free of cost. There is, however, a defect which is common to nearly every wiring system so installed. "The builder knows little and cares less about the refinements of electric lighting, and imagines he has done his duty if he runs a wire into every room. . . . The contractor, however, who carries out the work ought to use his utmost endeavours to see that the wiring is adequate, and that at least some of the unique advantages of electric lighting are provided for."

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Botusfleming.—For re-roofing and repairs to Hatt House, Botusfleming, Cornwall. Mr. Harold A. Hosking, P.A.S.L., Architect, Landrake, St. Germans, Cornwall:

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Runnalls and Sons, Liskeard ..	280	0	0
J. Paynter, Plymouth	219	0	0
W. H. Rothery, Saltash	199	0	0
Wm. Boundy,* Trematon, Saltash	185	0	0

* Accepted.

London, S.E.—For rebuilding and alterations to Primitive Methodist church and Sunday schools, Forest Hill, S.E. Mr. J. W. F. Phillipson, Newcastle-on-Tyne, Architect. Mr. F. G. Bush, 162, Stanstead Road, Forest Hill, S.E., Secretary:

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W. V. Goad	4,197		
H. H. Hollingsworth	4,147		
A. Black and Son	4,148		
T. Crossley and Son	4,029		
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Batley, Son, and Holness	3,965		
Thomas and Edge	3,891		
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Salford.—Accepted for erection of a wall to embayment to the canal and a pit for coal conveyor at the electricity works, for the Corporation: J. Gerrard and Sons, Ltd., Swinton, £1,157 5s. 5d.

Southall.—For erection of new Baptist schools in Western Road, Southall. Messrs. Thomas and Thomas, Architects:

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Talywain (Mon).—For erection of three houses and shops at Talywain. Mr. J. Langley, Architect, Abersychan:

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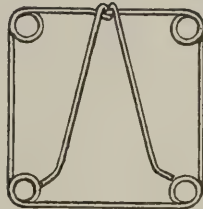
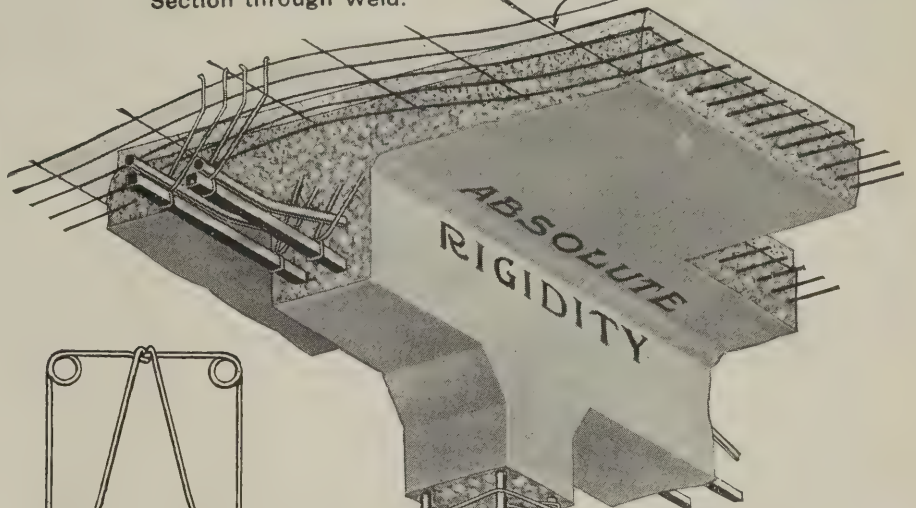
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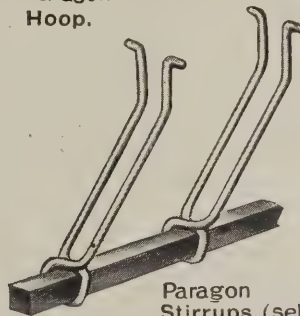


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UNDERPINNING A REINFORCED
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A delicate job of underpinning was required by unexpected conditions encountered in the foundations of a reinforced concrete factory building in Cincinnati. The building is 60 ft. by 200 ft. in plan and two storeys high. It is divided into three equal longitudinal bays by two rows of columns. The first floor rests directly on the ground. The second floor, designed for a live load of 1,000 lb. per square foot, is supported by beams and girders between the two rows of columns within the building and a row of columns in both side walls.

The site of the building is crossed transversely about midway by an old gravel pit. The latter had been filled with cinders and rubbish to bring it to the present street grade, the depth of the fill varying from 14 ft to 25 ft. This fill was made long previous to the erection of the building, and was considered to have compacted sufficiently to provide ample bearing capacity for the loads to impose on it. The floor spans are 18 ft. by 20 ft. in plan, thus bringing a load of 360,000 lb. on each of the columns. The latter were each provided with a pyramidal footing, 6 ft. 6 in. square at the base, which took bearing on the soil.

During construction and before the building was loaded, serious settlement caused the building to crack, near the transverse centre line, into practically two parts. Work was discontinued, and steps made to devise means of underpinning the columns.

The settlement was confined largely to ten columns at one end of the building, five in each of the two central rows. The bases of these columns had gone down from 1 in. to more than 3 in., on account of the inability of the old fill to carry the load imposed on it by them. The plan adopted, on the suggestion of Mr. John Stewart, of the Cranford Construction Company, was first to shore up the affected columns and cut off the base of each of them. Then four Simplex concrete piles were built under each column, and a new pyramidal base, 7 ft. square, was constructed on them to carry the column.

Each column was picked up separately, but the shoring of the adjacent columns in each row was made to react together. By means of clamps the load of each column was transferred to a pair of 12-in. I-beams, which were set horizontally and supported by jack screws on the shoring. On two opposite sides of each column notches were cut in the concrete. The notches provided bearing for short section of 12-in. channels, which were held in place by four 1-in. round rods. The ends of the latter were tapped through the short sections of channel, and the latter were clamped tight against the columns by nuts on the rods. The two short pieces of 12-in. channel against the columns transferred the load to the two 12-in. bearing I-beams in the opposite direction. These bearing beams were held together and against the respective columns by a pair of clamps.

The shoring for each two adjacent columns was arranged to act together by using long enough timbers to extend from under the end of one pair of bearing beams across under the end of the next pair. The

ends of each pair of bearing beams were seated on a timber carried by three 15-ton jack screws. Each set of screws in turn stood on short planks spanning between 12 in. by 12 in. timbers laid crosswise on the timbers resting on the ground. This arrangement made the shoring act as a cantilever.

When the columns were shored their loads were transferred to the shoring by extending the jacks. Then the footings were uncovered and cut away from the columns at the base of the latter. Pits were dug in the middle of the floor bays, and the old footing dragged over into these and buried. The concrete piles then were driven, and the new footings built.

The casing used in constructing the concrete piles had to be driven and the work all handled in a 14-ft. clearance. A special pair of very short leads were built by the contractor to carry a 3,000-lb. Vulcan drop hammer. The casings were made in 6-ft. sections, to secure enough clearance to operate the hammer. Even then there was only 7 ft. between the top of the leads and the top of each section when the first blow was struck.

The sections of the casings were made with male and female joints having a cotter-pin connection. When each casing was driven, it was filled with concrete and then pulled gradually, the concrete being forced out of it at the bottom into the hole. The cotter-pins were removed, and each section taken off as soon as it was high enough. Working in this manner, the piles were driven to a depth of 16 ft. to 28 ft. without difficulty. After they had set at least seven days, the new footings were built on them.

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Llanidilo.—For building new stores at Llanidilo, for the Farmers' Co-operative Society, Ltd., Messrs. G. Morgan and J. H. Morgan, F.R.I.B.A., Architects, 24, King Street, Carmarthen.

B. Howell and Son, Ltd.	
Llanelly	£1,699 0 0
Daniels and Rees, Cwmdwyfran, Carmarthen	1,548 0 0
Rees Davies, Carmarthen	1,519 0 0
C. Thomas and Co.,* Llanidilo	1,398 10 0

* Accepted.

London, N.W.—For the erection of a picture theatre on the site of 140, Maida Vale, for the Maida Vale Palace, Ltd., Messrs. Norfolk and Prior, Architects, Quantities by Mr. A. O. Breeds, Portugal Buildings, Lincoln's Inn Fields.

Godson and Sons	£13,742
J. Allen and Son	12,989
Rice and Son	12,920
W. Downs	12,695
Perry and Co.	12,426
Spiers and Son	12,193
G. Neal	11,899
Bovis, Ltd.	11,897
W. Lawrence and Sons	11,872
R. N. Marrable	11,800
F. G. Minter	11,750
J. Easton	11,382
Kirk and Kirk	11,289

London, N.—For the construction of new cells at King's Cross Road Police Station. Mr. J. Dixon Butler, F.R.I.B.A., Surveyor to the Metropolitan Police, New Scotland Yard, S.W. Quantities by Messrs. Thurgood, Son, and Chidgey, 8, Adelphi Terrace, Strand, W.C.

Newby and Bros.	£5,326
W. Downs	5,273
J. Jarvis and Sons	5,166
F. Smith and Co.	4,928
Kilby and Gavford	4,908
Holland and Hannen	4,881
F. J. Coxhead	4,821
Lole and Co.	4,816
J. Grover and Son	4,683
Higgs and Hill	4,554
W. Eyre	4,540

Midsomer Norton (Somerset).—Accepted for the erection of an additional classroom at the Church of England schools, Midsomer Norton, for the Trustees of Ann Harris' Charity. Mr. W. F. Bird, M.S.A., Architect, Midsomer Norton. F. Crouchen, Midsomer Norton, £310.

Midsomer Norton (Somerset).—Accepted for the provision and fixing of internal shop fittings to business premises, Midsomer Norton, for the Radstock Co-operative and Industrial Society, Ltd. Mr. W. F. Bird, M.S.A., Architect, Midsomer Norton.—S. Smith, Midsomer Norton, £295 16s.

Mill Hill (Middlesex).—For the erection of seven shops at Mill Hill, Hendon. Messrs. T. Dinwiddy and Sons, Architects, 54, Parliament Street, S.W., and Greenwich, S.E.

H. E. Percy	£2,537
W. Tout	2,160
C. W. Scott	2,040
Gough and Co.	1,951
F. Parvin*	1,790

* Accepted.

Northwich.—Accepted for erection of new baths at Northwich, for the Corporation: T. Astles, Northwich, £7,850.

Peasedown St. John (Somerset).—Accepted for the erection of a block of three cottages at Peasedown St. John, for Mr. J. O. Mullins. Mr. W. F. Bird, M.S.A., Architect, Midsomer Norton. W. J. Heal, High Littleton, £575.

Radstock (Somerset).—Accepted for a hot-water low pressure heating installation at the Council Schools, Radstock, Somerset for the Somerset County Education Committee. Mr. W. F. Bird, Architect, Midsomer Norton.—G. N. Haden and Sons, £206.

Radstock (Somerset).—Accepted for the construction of a heating chamber, repairs to floors, etc., at the Council Schools, Radstock, Somerset, for the Somerset County Education Committee. Mr. W. F. Bird, M.S.A., Architect, Midsomer Norton.—T. Foster, Radstock, £189.

Radstock (Somerset).—Accepted for the enlargement of boys' cloakroom, etc., at the Church of England School, Radstock, Somerset, for the Trustees. Mr. W. F. Bird, M.S.A., Architect, Midsomer Norton.—T. Foster, Radstock, £130.

Southampton.—For the rebuilding of 7 8, and 9, and the reinstatement of 11, Bridge Street, Southampton, for Messrs. E. Hart and Co. Mr. W. B. Hill, Architect, 93, Above Bar, Southampton.

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Dyer and Sons	2,710 0 0
H. Cawte	2,700 0 0
F. Kimber	2,598 0 0
A. Doggrell and Son	2,588 0 0
F. Osman and Co.	2,585 0 0
Jenkins and Sons, Ltd.	2,578 0 0
A. Wright and Son	2,565 0 0
H. Stevens and Co.	2,435 0 0
A. J. Colborne, Swindon	2,359 0 0
W. Jupe*	2,353 0 0

Rest of Southampton.

* Recommended for acceptance.

Troedryhiw.—Accepted for the erection of a girls' school, for the Methyr Education Authority.—A. J. Colborne, Swindon, £6,988.

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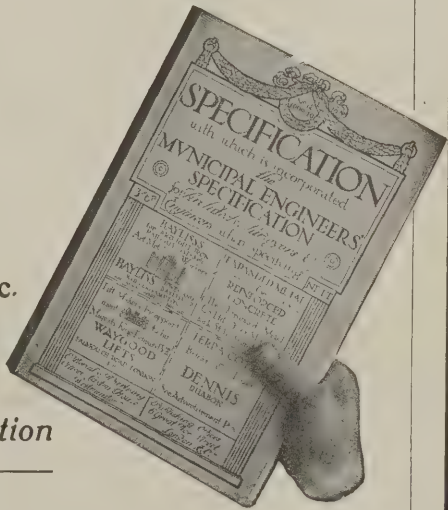
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WOODS AND FORESTS
DEPARTMENT REPORT.

His Majesty's Commissioners of Woods and Forests control so many building sites, present or prospective, and incidentally exercise so much influence on the design and construction of buildings, as well as on timber production, that the following summary of their various activities will be found to possess a considerable amount of practical and professional interest.

The administration of the properties controlled by the Woods and Forests Department is dealt with in the ninetieth report of the Commissioners [187], which has just been issued. These properties are of many different kinds, including not only forest areas, like the New Forest, and agricultural land, much of which is let in small holdings, but areas like the Windsor Great Park and many town properties. From London alone, for example, a net income of over £376,000 was derived during the past year.

Altogether the Department received payments amounting to just under £703,300. After deducting from this sum all the expenses incurred, the Department were able to pay into the Exchequer £530,000. The amount paid over last year was £500,000. The extent of all the Crown property now under the charge of the Commissioners (exclusive of land let for building purposes, foreshores, and mineral rights) is about 340,392 acres; of this an area of about 67,574 acres is used for the growth of timber.

During the last six years the creation of small holdings and allotments on Crown lands has been encouraged. About 400

acres, mostly in Lincolnshire, were let for such use last year, bringing up to 7,524 acres the area of land devoted by the Commissioners to this purpose. The great bulk of the agricultural land, however, still continues to be used as large farms, ranging from 50 acres to more than 1,000 acres, and the total area of land under the charge of Mr. Runciman, as one of the Commissioners, increased by over 3,800 acres. The Department spent £131,665 in the purchase of new property, mostly in England, but, on the other hand, estates and "unimprovable rents" were sold to the amount of £94,530.

The largest of the forest areas held by the Commissioners is the New Forest, where the Crown lands extend to 65,000 acres. Not all of this is timber land, however, much of the wooded area being broken up by heath and grazing land, and altogether the Crown woods, in the New Forest, enclosed and open, extend to about 23,760 acres. In recent years the receipts from the administration of the New Forest have been adversely affected by the great falling off in the price of bark, underwood, and faggots, which are frequently unsaleable. The sales of forest produce, chiefly timber, however, realised last year £7,306, though the profit on the administration of the Forest, the Manor of Lyndhurst, Parkhurst, and other woods only amounted to £1,847. The Department's School of Forestry, with eighteen students, is progressing very satisfactorily. All the students of the Senior Class obtained situations, except two who are continuing their education, one in Germany, the other at Manchester University. The work of restoration at Tintern Abbey has been continued, and nearly 18,000 persons visited the building during the year.

The maintenance of Windsor Park and woods, which are much used by the public for purposes of recreation, cost last year £32,372; the income from rents, timber sales, and other sources was only £6,302.

Particulars are given of the exchange of premises in London with a view to improving the Crown estates. Premises owned by Lord Howard de Walden in Oxford Street, Princes Street, Great Castle Street, Margaret Street, Great Portland Street, Little Portland Street (including part of the Russell Club and St. Mark's Yard) have been acquired by the Commissioners in exchange for property in Regent Street, Cavendish Place, and Langham Place.

The Commissioners also record the granting of the lease to the Royal Automobile Club of the site of the club's new buildings in Pall Mall. The site was formerly occupied by old buildings which formed in some cases the whole and in other cases portions of premises held under several Crown leases or tenancies at rents amounting to £12,036 per annum, of which £11,950 were rack rents. The premises were unlet and in hand as from April 5th, 1907. The new lease is for ninety-nine years from January 5th, 1908, and the "rents and other considerations" for the lease are stated to be £7,500 a year (after the fourth year) and the expenditure on erecting buildings.

Age of the Ordnance Survey.

A report on the progress of the Ordnance Survey, issued last week, states that, reckoning from the date of the first measurement of the Salisbury Plain base, the survey has entered on the 117th year of its existence.

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English Ecclesiastical Architecture, like English Domestic Architecture, has great traditions, and it is fortunate that there should exist a school of men among English Architects who possess the ability to produce work of the highest character. The ecclesiastical buildings of the prominent exponents of the Gothic Revival—Pugin, Scott, Butterfield and the rest—have already been fully illustrated, but never before has there been brought together a representative series of photographs of the recent work of English church architects. The value of this present collection therefore is self-evident. Examples of the best modern church work are included, and the volume is fully representative of what is being done by the chief architects of the present day, including buildings of Renaissance character as well as Gothic. The illustrations are from specially-taken photographs reproduced to a large size.

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ELECTRICAL NOTES.

Holophane Fittings.

With the principle of Holophane we are now all acquainted, and the application of this system of lighting to living-rooms, public buildings, and other places, is ever increasing. One of the criticisms which have been levelled against Holophane is that it does not readily lend itself to artistic applications. This, however, is not correct; naturally, Holophane has a certain simplicity and severity about it—which, indeed, many recognise as its chief charm—but certainly it can be treated artistically by those who know how to use it, and what its limitations are in this direction. In making these remarks we have before us a new price list, D 6, issued by Messrs. Siemens Brothers' Dynamo Works, Ltd., Tyssen Street, Dalston. This company has specialised in the direction of fittings for Holophane reflector bowls and spheres, and the designs in the price list in question exhibit considerable variations in style and methods of treating the somewhat limited spherical glass shapes.

It is the general impression that fittings of this kind are very expensive, but a glance at the list will show that they may be had for quite moderate prices. The general method of treatment is a metal band holding a Holophane sphere or bowl, with reflector, the whole suspended from the band by three chains converging on a ceiling hook. The price of the fitting varies partly with the size of the glassware and partly with the amount of elaboration in the brass band and metal chains. Some of these are finished in Adam, Louis, or Empire styles. Owing to the size of the bowls, it seems almost impossible to make the metal-work too heavy. A pretty series of designs is comprised in the ceiling

fittings for low rooms, theatres, etc., where the gallery is connected direct with the ceiling plate, and three short chains join the latter to the metal band. Besides pendants and ceiling fittings, however, we find designs of electroliers, in which the centre bowl is flanked by three small Holophane pendants, or, where the fitting consists of three bowls, their metal bands are joined together to form a kind of clover leaf. The list also contains examples of Holophane cluster pendants, arcs, opal fittings, etc., for use in offices, stores, clubs, shops, and similar situations.

Ferranti Switchboard Panels.

Messrs. Ferranti, Ltd., have issued a new list, known as H 302, the title of which is "Three-Phase, Medium Duty, High Tension, Totally Enclosed, Interlocked, Ironclad Standard Panel." There is no doubt that no shorter title can be found to describe suitably the apparatus listed, as to leave out any one of the components would be to omit an important part of the description. (Incidentally, the Germans would make a "portmanteau-word" of such a title.) The panel in question is described as a high-class, totally enclosed, fool-proof panel at a reasonable price, and there is no doubt that this claim can be substantiated. The interlocking arrangements, of which there are five combinations, are marvellous in their ingenuity. Messrs. Ferranti, Ltd., are, of course, specialists for work of this kind, and it would appear that for the present this is the last word in standardised panels for the purpose in question. Every possible kind of combination seems to have been provided for, and by a series of lucid descriptions and clearly printed tables it is possible to arrive at the price of practically any form of switch panel.

Inexpensive Heating Devices.

The energy which is being shown by makers of electrical heating and cooking devices, partly as the result of this year's agitations in the Press and before various societies and conventions, has resulted in the placing on the market of some devices for the coming season at prices which are, indeed, surprising. There is the Pygmy heater, made by the Bastian Electric Heating Syndicate, for keeping food warm and simmering, etc., listed at 6s. 6d. This apparatus does not take more current than an ordinary lamp. The General Electric Co., Ltd., are listing a coffee percolator at 4s. 6d. This has a self-contained heater, and is constructed of nickel-plated copper with ebonised handle. With this machine, spraying commences in three minutes after the current is turned on. This company is also offering a nickel-plated electric toaster, mounted on a porcelain base, the whole 8 in. by 4 in. by 7½ in. high, and costing 12s. 6d. to buy. Enough toast can be made for an average breakfast in ten minutes for a consumption of less than .1 unit. As against these small apparatus, Messrs. Simplex Conduits, Ltd., recently made a special toaster, taking 6 kw. when fully loaded, and capable of toasting 720 pieces of bread per hour. This quantity of toast is cheap even for as much as 6d. per hour.

Change of Address.

Stuart's Granolithic Company, Ltd., announce that, owing to increasing business, they have removed their City offices to more central and more commodious premises, at 45, Bedford Row, W.C. Telegrams, "Granolith, Holb., London"; telephones, 5268-9 Holborn. Their works and offices at Millwall remain as before.

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Barrett and Power, Hackney	1,469	0	0
J. E. Whiter and Co., Newington Butts, S.E.	1,377	0	0
W. Shurmur and Sons, Ltd., Upper Clapton, N.E.	1,368	0	0
H. Hann, Merton, S.W.	1,285	0	0
Strand Building Co., 200, Strand, W.C.*	1,151	0	0

* Recommended for acceptance.

Luton.—For erection of the swimming baths in Waller Street, for the Town Council.

J. Sanders and Son	£15,523	0	0
G. W. Buckingham	15,325	0	0
W. G. Dunham	15,284	0	0
H. Salisbury and Son	15,256	4	1
T. Hickman and Son	15,096	19	6
H. Lacey and Son	14,646	17	6
T. Wood and Son	14,348	17	11
T. and E. Neville	14,135	0	0
T. Higgs,* Northampton	13,595	11	2

* Accepted.

Lyme Regis.—For the erection of eight workmen's dwellings in blocks of four, for the Town Council.

W. Keitch, Ottery St. Mary	£2,053	17	0
Hallett and Collis, Lyme Regis	1,800	0	0
W. Caddy and Sons,* Lewesdon, Lyme Regis	1,595	15	0
J. Bazley, Axminster	1,570	5	6

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Seven Kings.—For the erection of Baptist church. Geo. Baines and Son, Architects, Clement's Inn, Strand, London, W.C.

W. Hammond	£5,044	0	0
J. Willmott and Sons	5,029	0	0
E. Roome and Co.	4,913	0	0
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Holliday and Greenwood	4,678	10	0
Akers and Co.	4,667	0	0
Goddard and Sons	4,644	0	0
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Mattock and Parsons	4,620	4	0
W. Gladding and Co.	4,610	0	0
Battley, Sons, and Holmes	4,459	10	0
J. W. Jerram*	4,414	15	0
J. Appleby and Sons (with-drawn)	4,243	0	0

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Upwey (Dorset).—For erection of pumping station and supply of machinery at Upwey, for the Portland Urban District Council.

C. Chamberlain, Leicester	£8,541	12	10
T. Conway, Ltd., Weymouth	8,419	0	0
Jesty and Baker,* Portland	8,163	13	9

* Accepted.

Publisher's Notices.

Offices: ADVERTISEMENT, EDITORIAL, AND COUNTING HOUSE—Caxton House, Westminster. PUBLISHING—6, Great New Street, Fetter Lane, E.C.

Telegraphic Address: "Buildable, London."

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Advertisements for the current week, alterations to serial advertisements, etc., must reach the office not later than first post on Saturday.

Rates for serial Advertisements, Special position, etc., sent upon application.

CAXTON HOUSE, WESTMINSTER, S.W.

COATOSTONE LIQUID STONE
For Interior or Exterior Work.
Applied as Paint on Plaster, Cement, Stone or Woodwork, gives a perfect effect of Natural Stone.

NEALSTONE IMITATION STONE
for applying to brickwork in plastic form.
For Interior or Exterior Work.

Awarded Grand Prix, Diploma of Honour and Gold Medal, Paris, Rome, Antwerp, Turin, etc.

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For Architects, Builders, and Engineers.

TRUE TO SCALE.

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Permanent. Done on any Paper or Cloth.

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Price List and Samples free on application.

MARBLE.

WALTON, GOODY & CRIPPS, LTD.
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Supply every description of
MARBLE WORK.

T'phone 618 North. T'grams "Goody, London."

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JONES & BAYLISS, LIMITED, MANUFACTURERS.

IRON FENCING, GATES, &c.
Catalogue free.

WOLVERHAMPTON,
and 139 & 141, CANNON STREET, LONDON, E.C.

(Established 1823). Mention this Journal.

"Wanted" Advertisements at Telegram Rates

12 Words for 6d.

Many readers conceive the intention of advertising some want, but fail to give it effect for various reasons.

Perhaps the chief of these reasons is that they do not know what the advertisement would cost, and have not time to ascertain.

This difficulty need no longer operate in the case of the Journal, as under our new scheme the rates for "Wants" advertisements without the slightest effort can be kept in the head.

The Journal rates are identical with the Inland Telegraph rates, namely:—

Twelve Words for Sixpence

and a half-penny for each additional word.

The only condition attached to the privilege of the use of these rates is that the coupon appearing on page xxi. should be cut out and sent with the advertisement.

Annual Subscribers are entitled to these rates without sending a coupon.

Regular subscribers through newsagents should send to the Manager of the Journal a post-card giving name and address of newsagent with whom their order is placed.

The rate is for those:—

- SEEKING APPOINTMENTS,
 - OFFERING APPOINTMENTS,
 - DESIRING PARTNERSHIPS,
 - PLACING PUPILS, &c., &c.
- (See "Wants" columns.)

The same low rates are open to those BUYING, SELLING, OR EXCHANGING any of the numerous articles relating to Professional or Business Equipment, such as:—

- DRAWING AND SURVEYING INSTRUMENTS,
- ARCHITECTURAL BOOKS,
- BUILDING APPLIANCES,
- MACHINERY, TACKLE, OR ODDMENTS,
- OFFICE FURNITURE, &c.

Many readers have lying about in their Offices, Workshops, or Yards, articles and material that could easily be disposed of or exchanged by use of these columns.

Advertise "Wants" at Telegram Rates.

ELECTRICAL NOTES.

Continuity Devices.

All those who are interested in wiring are aware of the necessity of making metal sheathings or tubes enclosing live wires electrically continuous in order to avoid the risk of shocks and short-circuit to earth. One of the wiring rules of the Institution of Electrical Engineers with regard to steel conduits reads as follows: "They must be electrically and mechanically continuous throughout. Plain slip sockets do not comply with this rule, some form of screwed or grip joint having a conductivity equal to that of the continuous tubing being necessary." The Factory and Workshop Act contains a somewhat similar provision.

These remarks are made with particular reference to the new list of "Geekoduct" continuity devices just issued by the General Electric Co., Ltd. This company appears to have specialised in these devices, although there are, of course, others on the market, but for the present purpose only those manufactured by the firm in question are being referred to.

First of all, there is the "Duplex" pin contact system. This is a modification of the pin system, a kind of staple or double pin being driven into two slots in the nipple of the tube fitting after the tube has been fitted in place, so that electrical contact is made by means of the various fittings between the successive lengths of conduit. This system is applicable to the close-joint and brazed joint tubes of the General Electric Company. In order to obtain better conductivity, it is recommended that the enamel from the tubes and fittings opposite the duplex pin be

removed. A large variety of fittings of all kinds—couplings, bends, elbows, tees, boxes, etc.—are supplied with the necessary slots for this system.

The next system is known as the "Magnet" grip. This consists of a steel strap with two sets of serrated teeth on the inside edges. It is used for encircling the end of each outlet to a fitting where the tube is inserted. When in place it is tightened up by a strong screw and nut, so that the teeth cut through the enamel of the fittings and the tubes, and thereby provide certain electrical continuity. It is claimed that this grip is entirely automatic and independent of the human factor, as no scraping of the tube is necessary when fitting it. The system has the advantage that no special fittings are necessary, but as, in the case of sleeves, the extra cost of these grips would be out of proportion to the price of the original sleeve, a special "Magnet" grip sleeve can be had, in which the grip is combined with the sleeve at each end. This system can also be fitted to existing surface tubing without dismantling the latter.

The "Geekoduct" grip nipple is not new, but must be referred to here. It consists of a screwed nipple with a hexagonal end, the screwed part being split. It is used for combining screwed fittings with slip socket conduits. The nipple is inserted loosely into the end of the fitting, the conduit is slipped into the nipple, and the latter is then screwed up by means of a special spanner. As a result, the nipple tightens up on to the conduit, which must, of course, have the enamel removed first at the point of contact. Exact internal diameters are guaranteed, and as the nipples are sherardised they are incorro-

dible. The fittings most generally required are listed and supplied complete with the grip nipples at each outlet.

The "Griptite" continuity system is an evolution from the foregoing grip-nipple. It consists of a series of split fittings, comprising, as it were, box and lid, with two lugs at each outlet and patent non-losable screws. The object of the latter is that when the lid half of the fitting is removed the screws cannot drop out. These fittings are naturally cheaper than split screwed fittings, and can be employed with unscrewed tubes. Of course, the ends of the latter should be cleaned of the enamel. When erecting this system, the tubes and fittings are fixed before the wires are inserted. The lids of the fittings are then removed, and each fitting thus provides an inspection and draw-through box, so that no inspection fittings are necessary. When the wires are in place, the lids are put on and the screws tightened up so as to grip the ends of the tubes tightly.

The list concludes with various earthing devices. A stamped steel earth clip with tightening screw is provided for bonding circuit tubes running into wooden fuse-boards, for earthing isolated lengths of tube or bridging wood blocks, etc. By removing the screw existing installations can be bonded by springing the clip over the tubes and then screwing them up again.

Other earthing devices include a special screwed socket with a boss, having a longitudinal hole for the earth wire and two grub-screws; earthing strap with or without cable thimbles, and earthing saddles for use with cable thimbles. The last are for use in exposed positions where rough usage may be encountered.

SIMPLEX HOLOPHANE FITTINGS

For Electric Light.



- ☞ HOLOPHANE PRISMATIC GLASSWARE shields the eye from all distressing glare and yet at the same time actually increases the useful illumination.
- ☞ It presents a charming appearance both by day and by night when used in conjunction with suitably designed metal work.
- ☞ Our designers have concentrated their attention on the requirement of these new reflectors and have produced a range of fittings which harmonise with the character of the glass without in any way diminishing the illumination efficiency.

These Simplex Holophane Fittings are made in many styles but we are at all times glad to prepare and submit special designs in keeping with any period style of architecture or furnishings.

SIMPLEX CONDUITS, LIMITED,

Manufacturers of Architectural Metal
Work, Door Furniture and Fittings,

GARRISON LANE, BIRMINGHAM.

Norton-in-the-Moors.—For first group of detached and semi-detached cottages at new mining village, Whitfield, Norton-in-the-Moors, for the Chatterley Whitfield Colliery Company, Limited

William Wall	£3,348	14	4
Fynney	3,149	0	0
Broadhurst	2,999	0	0
Cope	2,891	0	0
Ball and Robinson	2,890	0	0
Cooke	2,850	0	0
Moss	2,750	0	0
Sambrooks	2,750	0	0
Rogers	2,740	0	0
Goodwin	2,716	0	0
Grants	2,650	0	0
Sherratt	2,599	0	0
Brereton	2,500	0	0

*Accepted.

Portland.—For the erection of pumping station and cottage and fixing borehole pumps, for the Urban District Council. Mr. E. S. Henshaw, Waterworks Engineer:—

C. Chamberlain, Leicester	£8,541
T. Conway and Co., Weymouth	8,419
Jesty and Baker,* Portland.....	8,163

*Accepted.

Rhoslanerchrugoy (Ruabon).—Accepted for alterations to the "Lion" Inn, Rhos, Ruabon, for Messrs. Huntley and Mowatt, Island Green Brewery, Wrexham. C. D. Rutter, M.S.A., Architect, Wrexham.

Jones Bros., Ponkey, Ruabon £140 0 0

Senghenydd (Clam).—Accepted for the erection of a new junior school at Senghenydd, for the Glamorgan County Council. Mr. D. Pugh-Jones, F.S.I., M.S.A., County Architect, Cardiff. John Williams, contractor, Abertridwr, near Cardiff, £4,930.

Stoke.—For new offices at Wolfe Street, Stoke, for J. A. Robinson and Sons, Limited. Reginald T. Longden, Architect, York Chambers, Stoke-on-Trent, and St. Edward Street, Leek.

Ball and Robinson	915	0	0
Grant	900	0	0
S. Heath	885	0	0
Tompkinson and Bettelley... ..	875	0	0
Colley and Linton	863	7	0
T. Godwin*	857	0	0
S. Wilton	798	0	0

*Accepted.

Stoke.—For new offices at Stoke, for Messrs. J. A. Robinson and Sons. Reginald T. Longden, Architect, York Chambers, Stoke-on-Trent.

Ball and Robinson	£1,540	0	0
T. Godwin	1,530	0	0
Meiklejohn and Son	1,520	0	0
Wm. Grant	1,500	0	0
J. Cooke	1,500	0	0
Colley and Lindop	1,427	15	0

Weymouth.—For the completion of the nave and west end of St. Paul's Church, Westham, Weymouth. Plans by Mr. G. H. Fellowes Pryne, F.R.I.B.A., 6, Queen Anne's Gate, Westminster. Quantities by Mr. R. H. Hale, F.S.I., 6, Queen Anne's Gate, S.W.:—

J. Longley and Sons.....	£3,849	0	0
Jesty and Baker.....	3,399	19	11
W. E. Blake, Ltd.	3,320	0	0
J. Honour and Sons	3,260	0	0
Goddard and Sons	3,200	0	0
Webster and Cannon	3,170	0	0
R. Wilkins and Sons	3,144	0	0
W. L. Franklin, Ltd.....	3,050	0	0
A. White Bowman	2,789	0	0
T. Conway, Ltd.,* Weymouth	2,770	0	0

*Accepted.

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CAXTON HOUSE, WESTMINSTER, S.W.



GIVES SATISFACTION
—ALWAYS!

ROK Roofing will never disappoint the men who use it. We claim for ROK—and we are prepared to stand by any claim we make—that ROK is permanent and weatherproof—sun won't blister it, frost can't crack it, rain can't get through it, wind can't shift it; in fact no weather, however severe, can affect it, and it's more economical than iron, zinc, wood, tiles, slates, or any other roofing material.

Samples sent Free.

D. ANDERSON & SON, Ltd.,
Roach Road Works, Old Ford, London, E.
— Lagan Works, Belfast. —

PCB

A HIGH-CLASS ENAMEL AT A
MODERATE PRICE.

“ABBEY”
WHITE ENAMEL.

12/- PER GALLON.

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ELECTRIC LIFTS
Co., Ltd. London, E.C. Quick Delivery.

Silent Action.
Fool-Proof.
Moderate Price.

ELECTRICAL NOTES.

Simplex Heaters.

Messrs. Simplex Conduits, Ltd., are issuing a small booklet dealing with electric heaters and connectors, some fifty different patterns being shown in all. The range includes the simple two-lamp types to six-lamp types in Period styles. Connectors, both inexpensive and elaborate, are shown, as well as patterns for office and corridor heating, etc. It is interesting to note that the company has introduced a departure in making all the prices inclusive of internal wiring between switches and holders, this wiring being brought to two substantial screw terminals mounted on a special bridge-piece fixed to the inside of the case and so placed that it cannot be accidentally touched. The trouble due to the failure of the external flexible wire, caused by general wear and tear, has also received attention. Special flexible can be obtained, protected by wire armouring in galvanised and double-tinned steel wires without any extra cost, or in brass or tinned copper wire at slight extra cost. This wire armouring gives maximum flexibility, the various strands being also so close together as to form almost an unbroken covering.

There is difficulty in using the standard form of wall plug with this armouring if a neat job is to be secured, and for this purpose a special form of wall-socket has been designed which allows the armouring completely to enter the plug. A special arrangement grips the armouring separately, thus relieving the terminals of all strain. Where wired armour flexible is used with heaters, the terminal bridge-piece already referred to is fitted with a metal grip, which also forms a ready

means of earthing the heaters where this is required.

Domestic Telephones.

From the Western Electric Co., Ltd., we have received Booklet 109, which describes and illustrates in handy form some of the company's private telephone equipments. These include bell-wire telephones, intercommunication, and direct-line sets, besides various accessories. The first are known as "Westophones" and are used in connection with existing bell-wires. The idea is, of course, not new, but the particular instruments are of good construction in comparison with some of the cheap and nasty ones of foreign make which used to be on the market. They are claimed to give clear speech and to be durable, which virtues are, after all, the only ones that matter. In addition, however, they are highly finished in black and nickel-plate. The second type are called "Inter-phones" and are provided with key-buttons instead of the levers frequently used, and automatic replacement. The micro-telephones are of improved design and fitted with removable capsule transmitter without wired-in connections. These instruments are supplied for use with a local battery or a central battery, in table and wall patterns, the frameworks and fittings being in all cases handsomely finished. The Direct Line sets are suitable for use in business premises, schools, etc., and represent a compact and well-made apparatus at a low price.

Amongst the accessories are the Blake Insulated Staples, for use on all low voltage circuits of interior wiring. They are square-shouldered, and it is claimed that the fibre insulation cannot come off in driving. It forms a good insulating

medium, and prevents cutting or mutilation of the insulation of the wires, whilst in damp rooms it protects the wires against rust. These staples are made in several qualities and sizes, for hard wood, soft wood, and general use. The "Blue Bell" Dry Cell, also a speciality of this company, is listed, with a useful article in the form of resin-cored solder wound on reels.

G.E.C. Specialities.

The rate at which the publicity department of the General Electric Co., Ltd., turns out new trade literature makes it almost impossible to keep pace with this progressive company's doings. We have before us a new Osram Lamp Leaflet, describing the drawn wire lamp of that name and showing all the latest sizes and shapes for the present season. This lamp is so well known and proved that it is unnecessary to say anything more about it, which is the highest form of compliment. Next we must refer to a really admirable catalogue of Holophane Glassware, with useful data and information regarding its use and applications. A special section deals with Holophane-Benjamin reflectors, made of steel, for use in industrial situations. Another catalogue on illumination describes and illustrates the "Equiluxo" glassware, which, while embodying the principles of efficient reflection, also produces a softer and more mellow light, specially adapted to artistic effects. In fact, the motto of this material is "Glass without glare," the shades having a milky appearance and a translucency similar to white onyx. Other specialities to which our attention is drawn, but for which there is only space for a mere mention, are the Universal Reading Lamp and Cash's Patent Electrolier Chain.

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For Electric Light.



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Manufacturers of Architectural Metal
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GARRISON LANE, BIRMINGHAM.

October 26.—**GRANITE SETTS. Turton.**—Supply of 13,500 tons of Welsh granite setts, and for two traction waggons for the U.D.C. Specification and forms of tender may be obtained from the Surveyor, Council Offices, Bromley Cross, near Bolton. Tenders to be delivered to J. B. Goulburn, Clerk to the Council, Council Offices, Bromley Cross.

October 28.—**MATERIAL. Shoreham-by-Sea.**—Supply of 700 tons of granite quartzite or Elvan stone, broken, to pass through a 1½-in. ring, to be delivered in such quantities as the Town Surveyor may require, alongside wharf as ordered for the U.D.C. Prices to provide for all charges, including dues, and delivery into carts alongside. Also for 365 yards hand-picked surface flints, broken, to pass through 2-in. ring, to be delivered as convenient to contractor by December 31 next, where directed by the Town Surveyor. Particulars and forms of tender to be obtained of A. W. Nye, Town Surveyor, Shoreham-on-Sea. Tenders to be delivered to Harold Brown, Clerk to the Council.

October 31.—**GRANITE. Romford.**—Supply of about 1,800 tons of best blue Guernsey granite, hand-broken to 1½-in. cube, for the U.D.C. Forms of tender can be obtained on application to J. Turvey, Surveyor, Council Offices, Romford. Tenders to be sent to C. T. King, Clerk. Sureties required.

MISCELLANEOUS.

November 1.—**RETORTS, ETC. Llandudno.**—Supply of retorts, fire-clay goods, etc., delivered free at Llandudno, for the U.D.C. Full particulars may be had on application to the Gas Manager. Tenders to be sent to Alfred Conolly, Clerk to the Council, Town Hall, Llandudno.

November 4.—**PORTLAND CEMENT. London, E.C. (for New South Wales, Australia).**—For New South Wales, 130,000 casks of Portland cement for delivery at Sydney during the year 1913, for the Agent-General. The Agent-General will be prepared to consider tenders for lesser quantities, provided such tenders are for not less than 30,000 casks. The cement to be subject to New South Wales standard specification tests before shipment. Quotations to be c.i.f., and e. per steamer, ships' slings, Sydney. Tenders must state brand, place of manufacture, quantities that can be delivered monthly, date of first shipment, and length of notice required for further shipments. Forms of tender, specification, conditions of contract, etc., obtainable from Agent-General for New South Wales, 123 and 125, Cannon Street, London, E.C.

November 5.—**FIRE-CLAY GOODS. Sheffield.**—Supply of silica and fire-clay goods required at their works during the next twelve months, for the Directors of the Sheffield United Gas-light Company. Specifications and forms of tender may be obtained upon application to the Engineer, J. W. Morrison, M.I.C.E., at the company's offices, Commercial Street, Sheffield. Tenders must be delivered to Hanbury Thomas, Managing Director.

Tenders.

Information from accredited sources should be sent to "The Editor," at latest by noon on Saturday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Bettws (Clam).—Accepted for erection of a new mixed school at Bettws, for the Glamorgan County Council. Mr. D. Pugh-Jones, F.S.I., Cardiff, County Architect. Knox and Wells, Bangor Street, Cardiff, £3,077.

Birmingham.—Accepted for erection of a tramway depot at the corner of Highgate Road and Queen Street, Sparkbrook, for the City Council. T. Johnson, £21,747.

Blackburn.—For erection of a new public hall on Blakey Moor (substructure section), for the Corporation. Messrs. Briggs, Wolstenholme and Thornely, and Messrs. Stones, Stones and Atkinson, Richmond Terrace, Blackburn, Joint Architects:—

W. Livesey and Sons	£17,000
J. Fecitt and Sons	16,410
T. P. Willson and Sons, Lower Darwen	16,300
J. Partington, Middleton Junction	16,250
T. Higson and Sons	16,210
J. Whittaker and Sons	16,150
E. Lewis and Sons	16,100
W. J. W. Crowshaw and Sons,* Pump Street	16,000
Rest of Blackburn	

*Accepted.

Brymbo (Denbigh).—For the construction of a drill hall, caretaker's house, miniature rifle range and buildings in connection therewith at Brymbo, Denbighshire, for the 4th Battalion Royal Welsh Fusiliers. Mr. C. D. Rutter, M.S.A., Architect, Parr's Bank Chambers, Wrexham. Quantities by the Architect:—

H. O. Davies, Wrexham	£2,765	7	0
J. B. Woolley, Wrexham	2,750	0	0
Treasure and Sons, Ltd., Shrewsbury	2,708	18	0
R. Roberts, Coed Poeth, Wrexham	2,598	0	0
W. H. Wycherley,* Pentre Broughton, Wrexham	2,580	0	0

*Amended and accepted.

Chirk.—For the construction of a drill hall, caretaker's house, miniature rifle range and buildings in connection therewith, at Chirk, Denbighshire, for the 4th Battalion Royal Welsh Fusiliers. Mr. C. D. Rutter, M.S.A., Architect, Parr's Bank Chambers, Wrexham. Quantities by Architect:—

J. Carden, Rhosymed, Ruabon	£2,669	4	10
H. C. Davies, Wrexham	2,325	0	0
J. B. Woolley, Wrexham	2,150	0	0
Treasure and Sons, Ltd., Shrewsbury	2,141	0	0
E. H. Nicholas, Coleham, Shrewsbury	2,139	0	0
J. T. Jones, Cefn, Ruabon	2,135	0	0
W. F. Humphreys, Cefn Ruabon	2,008	16	6
T. L. Davies, Rhoslanerchrugog, Ruabon	1,998	15	0
Thomas and Sons, Ltd., Oswestry	1,980	0	0

*Amended and accepted.

Daventry.—Accepted for erection of the Council school, for the County Education Committee: T. Adams and Son, Daventry, £3,086, subject to a deduction of £140 for the omission of the south-east classroom.

Gloucester.—For erection of the workhouse infirmary, for the Guardians:—

Allen and Co., Westminster	£32,280
Barnsley and Sons, Birmingham	30,314
Collins and Godfrey, Tewkesbury	28,728
Tilt Bros., Bromsgrove	28,424
Bowen and Sons, Birmingham	27,729
Crane and Co., Ltd., Nottingham	27,322
Byard and Son,* Gloucester	24,457
Fencing and Roadmaking	
Byard and Son,*	1,553

*Accepted.

Hendon.—Accepted for erection of the King Edward Hospital, for the Committee. W. Gibson and Co., £2,300.

Kenilworth.—For erection of lodge, chapel, etc., in connection with proposed new cemetery, for the Kenilworth U.D.C. Mr. S. Douglas, C.E., Architect and Surveyor:—

Nixon and Sons, Kenilworth	£1,727	0	0
I. Langley, Tyburn, near Birmingham	1,445	8	0
Collins and Godfrey, Tewkesbury	1,393	0	0
G. F. Smith and Sons, Leamington, Spa	1,390	0	0
A. A. Wincott, Coventry	1,390	0	0
Tilt Bros., Bromsgrove	1,385	0	0
E. O. C. Howells, Coventry	1,320	0	0
A. J. Colbourne, Swindon	1,299	0	0
E. Lee and Son, Kenilworth	1,295	10	0
Exors. of R. Bowen, Leamington Spa	1,282	0	0
E. Smith and Son,* Kenilworth	1,280	0	0
Surveyor's estimate, £1,233 3s. 4d.			

*Accepted.

Newcastle-under-Lyme.—Accepted for three pairs of semi-detached houses at Brampton Farm Garden Suburb, Newcastle-under-Lyme. Reginald T. Longden, Architect, York Chambers, Stoke-on-Trent, and St. Edward Street, Leek. J. Cooke, Wolstanton.

Torquay.—For alterations to Swiss Cafe, Victoria-parade. F. G. Moore, A.M.I.C.E., Architect, 9, Fleet-street, Torquay:

J. O. Parker and Sons	£753	2	5
R. E. Narracott	732	0	0
R. F. Yeo and Sons	724	0	0
E. P. Bovey and Son	627	0	0
S. Blatchford and Sons*	625	0	0

*Provisionally accepted.

Towcester.—Accepted for erection of 17 working-class houses, for the Towcester R.D.C. Marriot, Rushden, £2,710.

KLEINE FLOORS
SOME NOTES ON THE
CONSTRUCTION
OF
FLOORS, ROOFS, AND
STAIRCASES.

By the KLEINE PATENT FIRE-RESISTING FLOORING SYNDICATE, Ltd.

Features of Importance
to Architects and Engineers.

SOME twenty years have now elapsed since the introduction of the Kleine System of Reinforced Brick Construction for floors, roofs, and staircases. During this time some millions of square yards have been used without a single instance of failure.

From a constructional point of view one of the chief features is that perfectly horizontal floors can be erected with ordinary rectangular bricks without any arch.

The principle upon which the Kleine System is based secures immense strength, and, as will be seen from the accompanying illustration, the iron tension rods are firmly embedded in cement mortar between the hollow bricks, thus forming a homogeneous slab of brick, cement mortar, and iron.



Two of the many Types of Kleine Flooring. Among the outstanding merits of the Kleine System of Construction the following may be mentioned as of first-class importance.

Reliability.

The method of construction is such that the strength of the flooring increases with age, and defects such as may arise in reinforced concrete and other forms of construction, owing to careless workmanship, defective materials, and the accidental alteration of position of tension rods are all overcome.

Fire Resistance.

Perhaps we cannot do better than quote from the report of Mr. Noble Twelvetrees, M.I.M.E., A.M.I.C.E., M.R.S.I., on a test which he carried out, as follows:—

"Finally, the results of the tests prove conclusively that all three floors behaved in a perfectly satisfactory manner, the resistance of the construction to fire and water leaving nothing to be desired. The behaviour of Floor A was particularly noteworthy in respect of its fire-resisting and load-bearing capacity after exposure to thermal influences and strains more severe than those obtaining in actual practice."

Rapidity of Construction.

Kleine Floors can be constructed with great rapidity. There is no long delay caused by having to wait for materials to set. Such centering as is required can be removed after a few days, and the floor is then ready for immediate plastering. The bricks form a perfect key for good and rapid plastering and as there is no expansion or contraction in these floors no cracks are caused in the plaster.

Our Guarantee.

We are in a position to guarantee our floors for any number of years, and our guarantee as regards the loads which our floors will carry holds good for all time, and the floors may be tested any number of years after they have been constructed.

We shall be pleased to supply Architects or Engineers with designs showing how the Kleine System can be applied to any Constructional Work upon which they may be engaged requiring floors, roofs, or staircases. In this matter our staff of skilled draftsmen is always at their disposal.

PLEASE WRITE FOR OUR BOOK

On Floor, Roof, and Staircase Construction. It is fully illustrated with Diagrams and Photographs and will be sent free of charge to all applicants.

The KLEINE PATENT FIRE-RESISTING FLOORING SYNDICATE, Ltd., 133-136, High Holborn, London, W.C.

TRADE AND CRAFT.

"Lifts on Liners."

Under this title, Messrs. R. Waygood and Co., Ltd., Falmouth Road, London, S.E., have issued a most alluring booklet, in which are included many illustrations of such famous vessels as the "Olympic," "Lusitania," "Mauretania," "Asturias," "Otway," "Amerika," and "Kaiser Wilhelm II.," in which, as in many other majestic liners, Waygood lifts have been installed. Interesting "biographettes," as they may be called, of the vessels are given, their builders, and length, breadth, depth, tonnage, and horse-power, being recorded, in addition to the particulars of the lifts and hoists which Messrs. Waygood have installed in them. Views in which the lifts appear show that the vessels are so sumptuously equipped as to have well earned their designation of "floating palaces," and it is easily seen

that the lifts are an important addition not only to comfort and convenience, but also to the elegance of the equipment. In the Royal mail steamer "Olympic," of the White Star Line, three first-class passenger lifts are arranged side by side in one trunkway, and the woodwork of the cages consists of mahogany finished in white enamel and gilt enrichments, framed, panelled, and moulded, with mirror, lantern roof, and ventilator; bell and other fittings being gold plated. Each cage is furnished with a portable upholstered seat and electric light. Passenger, stores, and food lifts, coal-hoists, etc., have been installed by this firm in ships belonging to the Cunard Steamship Company, the Royal Mail Steam Packet Company, the Orient Steam Navigation Company, the Hamburg-American Line, the Norddeutscher Lloyd, and a dozen other companies, and the firm "have had repeated orders from the great shipbuilders of Great Britain and Germany."

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Rates for serial Advertisements, Special position, etc., sent upon application. CAXTON HOUSE, WESTMINSTER, S.W.

Telegrams: Enriching London Telephone: No. 646, Avenue



RED CROSS and "MALTESE CROSS" BRANDS
highest quality London

PORTLAND CEMENT.

quick medium or slow setting
LION WORKS. GRAYS. ESTABLISHED 1855.
CAPACITY. 4,000 TONS WEEKLY

35, GREAT ST. HELENS, E.C.

ROOFING SLATES

Velinheli Penrhyn and Westmoreland,
SLATE SLAB GOODS
Both Plain and Enamelled.
ALFRED CARTER & CO., LIVERPOOL.

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THE SAFEST SCAFFOLD EVER USED.

Enquiry Invited for Special or Difficult Staging.
SUSPENDED SCAFFOLDS OUR SPECIALITY

PALMER'S are also Manufacturers of
STEEL WIRE SCAFFOLD LASHINGS,
SHEFFIELD CRUCIBLE STEEL
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BEST for the SCAFFOLDER. INDISPENSABLE without him.
15ft. LASHINGS.

YOUR INITIALS
STAMPED
ON OUR
REGISTERED
THIMBLES. 14/- per doz. GUARANTEED
TWICE THE
LIFE OF ANY
OTHER
LASHING.

USED ON ALL GOVERNMENT WORKS.
Scaffolding and Tackle of all kinds on Hire.

Palmer's Travelling Cradle and Scaffold Co.,
Victoria Works, 112, Belvedere Road, S.E.

For Architects, Builders, and Engineers.

TRUE TO SCALE. BLACK LINE PRINTS.

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W. F. STANLEY & CO., LTD.,

13, Railway Approach, London Bridge.

Tel.: 871 HOP. Telegrams: "TRIBRACH, LONDON."

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— Write for particulars, —
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PILKINGTON & CO.

(Established 1838.)

DEPTFORD WHARF,
190 and 192, CREEK ROAD, DEPTFORD, S.E.

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PATENT ASPHALTE AND FELT ROOFING
ACID-RESISTING ASPHALTE.
LIMMER ASPHALTE AND
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FIRE RESISTING SOUND RESISTING
VERMIN PROOF WEIGHT CARRIER

Approved by the L.C.C.

SNELLING & GATHERCOLE LTD.

Phoenix Works,
GRENELL ROAD,
Tel. 1187 Streatham. MITCHAM, S.W.

"THE" LIFT & HOIST CO.,

Sole Makers of
"PREMIER" LIFTS, and
"Premier" Folding Partitions,
Premier Ironworks,
DEPTFORD, S.E.

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FOR ALL
CLIMATES.

WATER-PROOF, ROT-PROOF,
INSECT-PROOF.

For Underlining Slates, Tiles, Iron Buildings, with or without Boards. For laying on joists. damp and deadens sound. Also for damp walls. Placed under Floor Boards excludes

WILLESDEN PAPER AND CANVAS WORKS, LTD., WILLESDEN JUNCTION, LONDON, N.W.

Telegrams: "Impermeable, London."

ESTABLISHED 1870.

Telephone No. 1165 Willesden.

Brand, Pettit, and Co., Tottenham	£5,128 0 0
C. P. Roberts and Co., Ltd., Dalston	5,118 0 0
J. Chessum and Sons, 7A, South-place	5,099 13 9
Lole and Co., Chelsea	4,972 5 9
G. S. S. Williams and Son, Richmond - street, Barnsbury*	4,959 0 0
* Recommended for acceptance.	

London, S.W.—For erection of a new police station at South Fulham. Mr. J. Dixon Butler, F.R.I.B.A., Architect, Surveyor to the Metropolitan Police District, New Scotland Yard, S.W. Quantities by Messrs. Thurgood, Son and Chidgey, 8, Adelphi-terrace, Strand, W.C.:

Harris and Wardrop	£14,423
Rice and Sons	14,223
F. Minter	14,140
Lorden and Sons	13,987
Todd and Newman	13,969
Trollope and Sons	13,900
Holloway Bros.	13,899
F. and H. Higgs, Ltd.	13,876
W. Willett	13,829
Prestige and Co.	13,771
Higgs and Hill	13,744
Lole and Co.	13,725
Appleby and Sons	13,653
J. Smith and Sons	13,559
Galbraith Bros.	13,491
Wallis and Sons	13,390
Adamson and Son	12,997
E. Lawrance and Sons	12,987
Patman and Fotheringham	12,783
J. Garlick, Ltd.	12,335

Nuneaton.—Accepted for erection of a cookery and manual instruction centre in Coton-road, for the Education Committee: T. Smith, Nuneaton, £3,642 12s.

Southend-on-Sea.—For erection of pumping station and destructor buildings, inclined roadway, two cottages, and other works at the sewage disposal works, Prittlewell, Southend-on-Sea, for the Corporation. Mr. E. J. Elford, M.I.C.E., Borough Engineer:

Peerless, Dennis, and Co., East-bourne	£16,649
A. N. Coles, Plymouth	15,586
Chessum and Son, London, E.C.	15,321
G. Brown, Grays	15,250
J. Greenwood, Ltd., London-bridge	14,993
J. C. Flaxman, Southend-on-Sea....	14,700
C. Gray, Acton Park	14,611
W. E. Davey, Southend-on-Sea ...	14,070
S. E. Moss, Southend-on-Sea.....	13,755
Young and Son, Norwich	13,735
R. and E. Evans, Plymouth	13,712
G. Coxhead, Leytonstone	13,423
Davey and Armitage, Southend-on-Sea	13,333
E. and B. H. Davey, Southend-on-Sea*	13,195
* Accepted.	

Whitfield.—For erection of the first group of detached and semi-detached cottages at new mining village, Whitfield, Norton-in-the-Moors, for the Chatterley Whitfield Colliery Co., Ltd.:

W. Wall	£3,348 14 4
Finney	3,149 0 0
Broadhurst	2,999 0 0
Cope	2,891 0 0
Ball and Robinson	2,890 0 0
Cooke	2,850 0 0
Moss	2,750 0 0
Sambrook	2,750 0 0
Rogers	2,740 0 0
Goodwin	2,716 0 0
Grants*	2,650 0 0
Sherratt	2,599 0 0
Brereton	2,500 0 0
* Accepted.	

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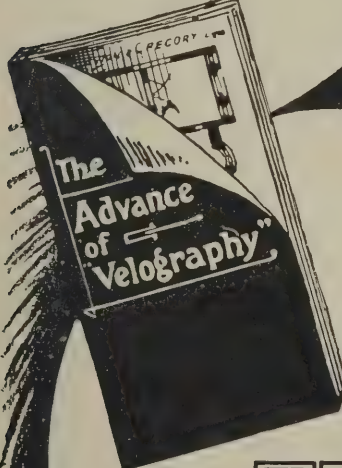
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Quick Delivery.

Silent Action.
Fool-Proof.
Moderate Price.



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It tells you how you can save your time
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permanent, in any colour, on any material. But send for the
free descriptive booklet.

A postcard with name, address and business brings it by return.
Send now: NORTON & GREGORY, Ltd.
Castle Lane, Westminster, London, S.W

ELECTRICAL NOTES.

Lamp Competition.

Osram week has come and gone, and one result, it is certain, has been a large amount of money gone into the pockets of the newspaper proprietors. For it could hardly be expected that other lamp makers would sit with hands folded whilst one monopolised the windows of electrical contractors in all parts of the country for a whole week. And so the daily papers, both London and provincial, reaped a fine harvest in advertising business, pages and pages of announcements being inserted to show that each lamp was the best. There is, however, no denying the fact that the General Electric Company, Ltd., are to be congratulated on the manner in which they organised their campaign. Everything seemed ready at the right moment, the shop windows were in many cases most attractively and tastefully decorated, and there was an abundance of advertising material in the shape of postcards, folders, pamphlets, and other devices to catch the eye of the man in the street and to compel him to memorise the Osram Lamp.

In one sense it would be interesting to know how far a campaign of this kind succeeds in its object. Does the average consumer lay in a stock of lamps at any particular time of the year, or only when he wants them? If so, does he buy a dozen or two or only two or three, just as required? One is prompted to ask these questions because, whilst there is no doubt that most people will purchase more lamps during the dark months than during the light months, the impression prevails that they generally live from hand to mouth, so

to speak, in the matter of lamps, and this refers more especially to small consumers. Therefore, whilst October seems a good month in which to have such a campaign, because by then everybody has returned from the holidays, is it best to throw all one's eggs into one basket and concentrate efforts on one week expecting the consumer to lay in his winter stock as a result, and to ignore the fact that he may only buy just what he wants at the time and that next time he may have forgotten about the campaign and be attracted by the allurements of a rival lamp? In fact, is this form of concentrated advertising in a short space of time better than consistent advertising over a long period? It would be interesting to have the opinions of lamp makers on these questions. More valuable, however, would be the verdict of professional advertising experts, who would probably affirm that the one system should not supersede the other.

The Engineering Exhibition.

The exhibition which closed last week at Olympia was remarkable for the machine tools which were displayed, and in the operation of these electricity played a considerable part. The electric motor was, in fact, everywhere in evidence, and of the many in use eighty-five were supplied by the British Thomson-Houston Company, Ltd., of Rugby. Amongst some of the exhibitors may be mentioned the following: The Linolite Company, who showed their Woodhouse system of steel casing for electrical conductors, and their "Tubolite" system of electric lighting, which is specially adapted for shop window, show case, and similar purposes. The Foster Instrument Company exhibited some interesting

pyrometers, including the fixed-focus radiation pattern, by means of which the temperature of a furnace can be ascertained by directing the tube at the hot body with one hand and reading off the temperature from an indicator in the other hand.

Robert W. Paul also showed some temperature-indicating and measuring instruments, all of which are, of course, based on the electro-motive force generated in a thermo-couple; whilst the Cambridge Scientific Instrument Co., whose speciality is this kind of work, had a large selection of these apparatus in many varieties.

A Fifty-ampere Plug and Socket.

Messrs. Simplex Conduits, Ltd., have placed on the market a useful device for power purposes and also for stage lighting in the shape of their 50-ampere plug, which is claimed to be designed in accordance with present practice and requirements. The body is made in two pieces and is cylindrical. The socket is a casting, tapped at one end for conduit up to $1\frac{1}{2}$ in. diameter and having four fixing lugs. The interior has a specially shaped fibre piece mounted with the terminals for connecting up with the circuit wires and for snipping the plug pins. This fibre is specially prepared, and has a very high resistance; it is held in position by a key cast on the inside of the case. The plug is of the three-pin type, one pin being earthed and entering the case, which is aluminium. A spring catch on the socket serves to hold the plug firmly when this is on the socket, and also holds fast a hinged spring cover for the socket holes when the plug is not in use. The latter is provided with a handle giving an ample grip.

SIMPLEX HOLOPHANE FITTINGS

For Electric Light.



- ☞ HOLOPHANE PRISMATIC GLASSWARE shields the eye from all distressing glare and yet at the same time actually increases the useful illumination.
- ☞ It presents a charming appearance both by day and by night when used in conjunction with suitably designed metal work.
- ☞ Our designers have concentrated their attention on the requirement of these new reflectors and have produced a range of fittings which harmonise with the character of the glass without in any way diminishing the illumination efficiency.

These Simplex Holophane Fittings are made in many styles but we are at all times glad to prepare and submit special designs in keeping with any period style of architecture or furnishings.

SIMPLEX CONDUITS, LIMITED,

Manufacturers of Architectural Metal
Work, Door Furniture and Fittings,

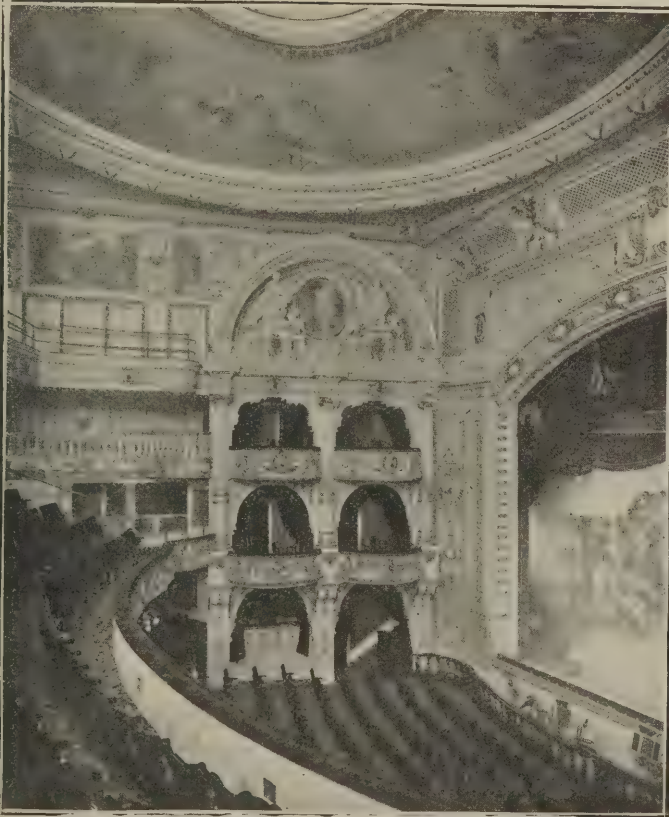
GARRISON LANE, BIRMINGHAM.

Geo. Couzens and Sons, Ltd. £765 0 0	Rowters (near Burraton).—For the erection of cottages at Rowters, near Burraton, for the St. Germans R.D.C.:—	
J. H. Maggs and Co. 747 16 5	R. E. Narracott, Torquay ... £985 0 0	
John Harry (Radyr) 715 15 0	W. H. Rothery, Saltash 695 0 0	
E. D. W. Evans 710 10 10	W. H. Pitt, Plymouth 690 0 0	
W. T. Morgan 696 0 0	Wm. Boundy, Saltash 680 0 0	
Geo. Griffiths and Son 690 0 0	John F. Ashton, Saltash 610 0 0	
C. H. Taylor 684 0 0	Wm. P. Petherick,* Notter Mills, Hatt, R.S.O. 595 10 0	
J. Makin 681 8 5		
William Cox (Llandaff) 680 17 0		
David Davies 670 0 0		
Niblett and Davies 666 11 0		
S. Hanson (Llanishen) 629 14 0		
E. P. Edwards and Co.* 586 19 0		
Rest of Cardiff.		

* Accepted.

Raunds (Northants).— For erection of a new public elementary school in the parish of Raunds, for the Northamptonshire County Council Education Committee. Messrs. Blackwell and Riddey, Architects, 53, High Street, Kettering:—	Tottenham.— For the erection of a new police station at Tottenham. Mr. J. Dixon Butler, F.R.I.B.A., Surveyor to the Metropolitan Police District, New Scotland Yard, S.W. Quantities by Thurgood, Son, and Chidgey, 8, Adelphi Terrace, Strand, W.C.:—	
T. Hickman and Sons, Market Harborough £7,168 0 0	Knight and Son £14,239	
C. R. Pettitt, Thrapston 6,669 0 0	Stapleton and Sons 13,814	
Smith, Edmunds, and Co., Kettering 6,600 0 0	Hall, Beddall, and Co. 13,707	
Smith and Bunning, Kettering 6,479 0 0	Goodall and Son 13,636	
Smith and Son, Raunds 6,347 7 0	C. Wall and Co. 13,608	
Beardsmore and West, Northampton 6,280 0 0	Perry and Co. 13,400	
Hacksley Bros., Wellingborough 6,189 0 0	Pattinson and Sons 13,364	
W. Packwood, Rushden 6,173 0 0	Sabey and Son 13,277	
R. Marriott, Rushden 6,107 0 0	Gadson and Sons 13,250	
J. G. Pullen and Sons, Northampton 5,921 13 0	Fairhead and Son 13,230	
	Willmott and Sons 13,200	
	C. Ansell 13,100	
	Roome and Co. 13,100	
	W. Lawrence 13,094	
	A. E. Symes 13,088	
	Dove Bros. 13,073	
	A. Monk 13,050	
	Grover and Son 12,996	
	Patman and Fotheringham 12,843	
	G. W. Rowley 12,734	

JOHN TANNER & SON,



NEW PRINCES THEATRE, SHAFESBURY AVENUE.

3, 5 & 7, Gill Street,
LIVERPOOL.

London Studio, Office and Works:
45, Horseferry Road, Westminster, S.W.

Telegrams—"Partition, Liverpool." Telephones—Royal 17 44 Liverpool
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Fine Art Decorators, Artists, Modellers and Workers in Fibrous Plaster, Steel Bracketting, Cradling and Suspended Mild Steel Bars to carry Fibrous Plasterwork or Expanded Metal Ceilings for Ordinary Plastering.

MANUFACTURERS OF "FERROCON" IMITATION STONE.

Architects and their Pupils are specially invited to our London Studio and Works to view the manufacture of "Fibrous Plaster" on presentation of their card.

The following are a few Contracts we have executed and in progress:—

Victoria and Albert Museum. Sir Aston Webb, C.B., R.A., Architect.
New Sessions Court, Blackburn.
Briggs, Wolstenholme & Thornely, FF.R.I.B.A.
Stones, Stones & Atkinson, Architects, Blackburn.
Woolwich and Stockport Town Halls. Sir A. Brumwell Thomas, F.R.I.B.A., Architect.
Liverpool Town Hall.
Stoke-on-Trent Town Hall. J. A. Bowden, M.S.A., and Thomas Wallis, M.S.A., Joint Architects, London.
Longton Town Hall. J. H. Beckett, Esq., A.R.I.B.A., Architect, Longton.
South Shields Town Hall. E. E. Fetch, Esq., A.R.I.B.A., Architect.
London Opera House. Vestibule, Entrance Hall, Foyers and Saloons, for Oscar Hammerstein, Esq.
Portsmouth Hippodrome.
Bedminster Hippodrome.
Tivoli, Liverpool.
Empire, Burnley.
New Princes Theatre, London. Bertie Crewe, Esq., Architect.
His Majesty's Theatre, Manchester. Horace Farquharson, Richardson & Gill, Architects, London.
Repertory Theatre, Liverpool. Prof. Adshead, A.R.I.B.A., Architect.
Gilmour Hall, Liverpool. Professor Reilly, A.R.I.B.A., Architect.
New Grand Theatre, Pentre.
New Hippodrome, Aldershot. B. Crewe, Esq., Architect.

ENQUIRIES ARE SPECIALLY INVITED FOR ALL CLASSES OF PLASTERWORK.

ELECTRIC LIFTS

Co., Ltd. London, E.C.

Silent Action.
Fool-Proof.
Moderate Price.

Quick Delivery.

ELECTRICAL NOTES.

A Novelty in Fittings.

Electrical apparatus of all kinds have been improved during the last few years, but electric-light fittings, so far as mechanical construction is concerned, have remained practically the same since their evolution from gas fittings, only the actual style or æsthetic design having changed from time to time. The British Thomson-Houston Co., Ltd., are therefore to be congratulated on having introduced an innovation in the shape of their "Mazdaliers." In these, two main considerations have been kept in view—namely, convenience in handling, storing and installing, and effective lighting results. Mazdaliers are supplied to the contractor packed in neat cardboard cartons, which can easily be stocked on shelves. Every fitting is absolutely complete with holders, galleries, and wiring, so that the expense and trouble of installation are considerably reduced, whilst the cartons protect the fittings from dust and oxidation. Mazdaliers are supplied with square or round tubes, for one, two, three, four or five lamps, and in two finishes, namely, "Cloister" (a rich oxidised copper) and brushed brass (a dull brass finish). They can be easily and rapidly fixed and made ready for use in a few minutes.

The list prices cover holders and galleries, all completely wired—everything in fact, except holders and lamps. A large and varied stock of these compact fittings can be stocked for a trifling outlay, even in a small showroom, and contractors who stock them are in a position to execute experimental or temporary installations with a minimum of damage to

the fittings and of trouble to himself or his client. Whenever it may become necessary to remove Mazdaliers, these can be taken down, packed in the cartons, and stored and kept in good condition until required. The makers claim that by the supply of these fittings, and with the assistance of their illuminating engineers' department, the contractor or architect is enabled to meet every requirement of satisfactory and scientific illumination. In conjunction with Mazda lamps and well-designed reflectors, such as Veluria or Holophanes, the Mazdaliers provide a convenient, well-proportioned, dignified, and highly effective light unit, in which the spacing of arms and length of drop have been carefully calculated to give the best possible distribution of light.

The General Electric Company.

Mr. Fred S. Sells, for the past ten years manager of the Manchester branch of the General Electric Co., Ltd., has just returned from a trip to South America, where he has completed the work entailed in connection with the formation of the Anglo-Argentine General Electric Co., Ltd., and has also improved the organisation of the company's interests in Brazil. In addition to resuming his former work, Mr. Sells has accepted a seat on the board of the General Electric Co., Ltd., this having been offered to him some few months ago in recognition of his long and useful services to the company.

Messrs. Wilkinsons' Novelties.

Some electrical novelties have been introduced recently by Messrs. T. H. Wilkinsons and Partners, Ltd., Harpenden. One of these is an ingenious electric-light pendant for attaching to any ceiling rose point with flexible cord. The device con-

sists of a curved tube with cord grip at one end, and an arrangement at the other end by which a conical shade or reflector can be adjusted to any position and kept there through an angle of 180 degrees. Hence, all the advantages of direct, semi-indirect, or indirect lighting may be obtained.

This firm are also offering a new system of electric heating, consisting of lengths of pipes with internal heating arrangements, which, it is claimed, can be installed at a fraction of the cost of steam or box water apparatus. The sections are 9 ft. 6 in. long, consume 1,000 watts, and can be obtained for 23s. 6d.

The Belling Electric Fire.

A real advance in electric fires seems to have been made by Messrs. Belling and Co., of Enfield. This apparatus appears to be constructed on sound scientific and mechanical lines, and is claimed to be the nearest approach to the ordinary coal fire yet produced. Owing to its construction and the passage of the air currents over the glowing wires, continuous waves of heat are produced, of varying temperatures, which gives the realistic "live" effect. This is also enhanced by the back, which is so constructed as to throw the glow in all directions. The Belling fires are supplied in various finishes from £3 10s. each, and they consume two units per hour, which at 1d. per unit means 2d. an hour "full on" and 1d. per hour "half on." They are suitable for warming rooms up to about 15 ft. square, and when the room is sufficiently warm they are switched to "half on." As regards size, the dimensions are 27 in. high by 18 in. wide and 6½ in. deep, the weight being 28 lb. The body is of cast iron and the backs are of aluminium.

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Manufacturers of Architectural Metal
Work, Door Furniture and Fittings,

GARRISON LANE, BIRMINGHAM.

Northampton.—For additions to and improvements of the boys' and girls' departments of the Far Cotton School, for the Corporation:—

H. Branson	£1,230	0	0
E. Archer and Sons	1,155	0	0
E. D. Sharman and Son ...	1,098	0	0
E. Green	1,094	0	0
Beardmore and West	1,072	0	0
A. P. Hawtin	1,046	0	0
W. Higgins	1,039	0	0
G. W. Souster and Son ...	1,023	18	0
R. Cosford	1,005	0	0
J. G. Fisher* J.	987	0	0

* Recommended for acceptance.

Richmond (Surrey).—For extension of the public baths, for the Town Council. Mr. J. H. Brierley, Borough Surveyor:—

Lown and Co., London	£3,954
Speechley and Smith, Richmond	3,475
E. Peddle, West Norwood	3,424
Offer and Sons, Kingston-upon-Thames	3,376
Jarman and Co., Richmond	3,259
Dorey and Co.* Brentford	3,250
M. Pearson, London	3,249
Crosby and Co., Farnham	3,167
Borough surveyor's estimate, £3,250.	

* Accepted.

Senghenydd (Glam).—Accepted for erection of a new school at Senghenydd, for the Glamorgan County Council. Mr. D. Pugh Jones, F.S.I., M.S.A. County Architect, Cardiff. John Williams, Abertridwr, near Caerphilly, £4,922 16s. 10d.

Shrewsbury.—Provisionally accepted for the widening of English Bridge across the river Severn, for the Town Council. Morrison and Mason, Glasgow, £12,365, if concrete blocks are to be used instead of stone £11,793 5s.

Southampton.—Accepted for erection of a school for 1,260 children in King Edward's Avenue, for the Education Committee. Jenkins and Sons, Southampton, £15,154.

Trefechan.—For erection of 30 workmen's dwellings at Trefechan, Aberystwyth, for the Town Council. Mr. R. Jones, Borough Surveyor, Smithfield Road, Aberystwyth:—

E. M. Evans and Sons	£6,656	0	0
J. J. Edwards	6,211	0	0
D. and M. Davies	5,673	0	0
E. Evans and Son	5,284	0	0
Jenkins Bros., Penparke ...	5,227	10	0
E. E. Jenkins	5,189	9	0
Edwards Bros.* Trefechan ..	4,972	17	7
J. Humphreys	4,970	0	0
Owen Bros. (withdrawn) ...	4,757	13	0

Surveyor's estimate, £5,413 15s. 9d.

All of Aberystwyth.

* Accepted.

Trowbridge.—For proposed alterations and additions to St. George's Foundry, Trowbridge, Wilts, for the Wilts United Dairies, Ltd. Messrs. Bennett and Stratton, Finchley, Architects. Quantities by Mr. Ernest E. Richardson, P.A.S.I., 5, John Street, Bedford Row, W.C.:—

Long	£5,328
Rendell	4,860
Chivers and Co.	4,645
Long	4,567
Light	4,469
Haywood and Wooster	4,443
Parsons Bros.	4,317
Downing and Rudman	4,297
E. Linzey and Sons	4,250
Watts and Co.	4,037
Bigwood and Co.* Melksham ...	3,750

* Accepted.

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ELECTRICAL NOTES.

The B.T.H. Supplies Catalogue.

We have received from the British Thomson-Houston Co., Ltd., a copy of the first bound catalogue issued by their lamp and wiring supplies department, of Mazda House, 77, Upper Thames Street, E.C. This work, which is certainly produced in first-class style, is bound in boards and comprises some 400 pages, excellently printed, illustrated, and cross-indexed. Every article is numbered and has an indicator letter, which also appears at the top of the page and the beginning of each section, so that identification is a matter of ease. The introductory section contains some useful information regarding definitions and illuminative work, technical data on heating and cooking apparatus and small power motors, besides other useful data and tables.

The first section (L) deals with lamps—Mazda, Gem, and B.T.H. Edison lamps, with technical data on efficiencies, etc., including curves and tables, which have not been published before. The remaining sections are A (wiring accessories), S (shades and reflectors), F (fittings), B (bells, telephones, and batteries), M (miscellaneous), W (wires), T (conduit fittings), and C (arc lamps, power, heating, and cooking appliances). We have not the necessary space at our disposal to deal with the whole of the contents, but it is claimed that the catalogue lists the best materials and not the ordinary standard stuff. The chief specialities are in the fittings section, which includes the "Eye Rest" and other fittings, which have lately been noticed in this column.

Section M contains some special theatre stage apparatus which the company have

just placed on the market and which are exclusive to the B.T.H. Co., while a speciality of section C is the magnetite arc lamp. All those who are interested in electrical supplies should write for this catalogue.

The Siemens "Lumograd."

This instrument, which has been introduced by Messrs. Siemens Brothers' Dynamo Works, Ltd., is intended for measuring candle power, surface brightness, and illumination. It is a neat and portable arrangement, entirely self-contained. It comprises an outer case with a strap for carrying, and having a photometre head in the top. A tripod stand is supplied for use when measuring the angle of illumination. A 2.5 volt lamp is run on a battery giving 1.4 volts, thus preserving its candle-power for a long time, while instead of an accumulator as employed in other instruments of the kind, a dry battery is used. As the standard of light is so small, neutral tinted glasses of various densities are interposed, one of which gives a direct reading on a dial and the others having a constant for multiplying the readings. The apparatus is particularly convenient for using over a large range by means of neutral-tinted glasses, the scale being altered in a few seconds. Indeed, the range varies from .025 to 32 candle-feet. The instrument can be checked easily at intervals, as it is only necessary to set up a lamp of known candle-power (1 or 2) and to place the instrument so that the photometre head is 1 ft. away from the lamp. If the reading is found to be incorrect the instrument is adjusted by means of a small screw provided for the purpose. The "Lumograd" should fill a long-felt want. By directing it at a distant object the surface brightness can be measured,

whilst the illumination values on a vertical or inclined surface can be ascertained. It can also be applied for testing the reflecting power of wallpapers and for measuring their light-absorption value, a very important point in connection with the lighting of interiors.

The Henley Wiring System.

When this system was introduced last year at the Electrical Exhibition at Olympia, we referred to the subject in these columns. Since then Messrs. W. T. Henley's Telegraph Works Co., Ltd., have developed the system largely, and many important installations have been wired on this principle. The makers do not claim that it should be used under all conditions, but that where surface wiring is the only one possible, their system fulfils the requirements better than any other. With this system, owing to its low first cost, ease and simplicity of erection, and the small amount of cutting away that is necessary, involving practically no damage to decorations, together with its unobtrusiveness, houses can be wired which, under ordinary circumstances, would remain wedded to gas. There are two classes of wire supplied—a concentric wire with the outer conductor uninsulated for use with earthed concentric wiring, and a twin wire consisting of two insulated conductors under one cover. The former is used with alternating current, in conjunction with a transformer, and effects considerable economies. An outer metal covering, consisting of a special alloy, is used for both classes of wire. This is harder and stronger than lead, takes a more permanent set, and is unaffected by changes of temperature. It forms a seamless tube on the wire and is impervious to moisture. The firm issue a booklet on the subject.

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- ❑ It presents a charming appearance both by day and by night when used in conjunction with suitably designed metal work.
- ❑ Our designers have concentrated their attention on the requirement of these new reflectors and have produced a range of fittings which harmonise with the character of the glass without in any way diminishing the illumination efficiency.

These Simplex Holophane Fittings are made in many styles but we are at all times glad to prepare and submit special designs in keeping with any period style of architecture or furnishings.

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London.—For erection of verandahs to double cottage blocks at Queen Mary's Hospital, for the Metropolitan Asylums Board:—

Wilson and Smith, Ltd., West Strand	£1,839	0	0
Hering and Son, Ltd., Chertsey	1,690	0	0
General Iron Foundry Co., Ltd., Upper Thames Street, E.O.	1,670	0	0
F. W. Honour, Warringham ..	1,596	0	0
T. H. Mitchell and Co., Eccles Parnall and Sons, Ltd., Bristol	1,578	5	0
W. S. Sharpin, Bow, E.	1,550	0	0
E. Warr, Summerstown, S.W.	1,479	0	0

Summers Bros., Normanhurst, Rustington* 1,247 | 0 | 0 |

Engineer-in-chief's estimate, £1,170.

* Recommended for acceptance.

London, N.—For enlargement of the girls' and infants' playground of the Pakeman Street school, Islington, for the London County Council:—

Brand, Pettit and Co., 247, West Green Road, Tottenham*	£1,026	0	0
Stevens and Sons, Crouch Hill	1,089	2	6
McLaughlin and Harvey, Ltd., Islington	1,093	0	0
W. Lawrence and Son, Finsbury Circus	1,120	0	0
W. Reason, Rosebery Avenue	1,179	0	0
G. S. S. Williams and Son, Barnsbury	1,192	0	0
E. Lawrence and Son, Ltd., City Road	1,213	0	0
A. J. Staines and Co., Ltd., Great Titchfield Street ..	1,252	0	0
W. Silk and Son, Homerton, Architect's estimate, £1,174.	1,485	17	0

* Recommended for acceptance.

London, E.—For the enlargement of the Gill Street school, Limehouse, for the London County Council:—

Vigor and Co., Poplar	£3,264	4	0
A. E. Symes, Stratford	3,205	0	0
Thomas and Edge, Woolwich ..	3,112	0	0
F. and T. Thorne, Isle of Dogs ..	3,090	0	0
E. Lawrence and Sons, Ltd., City Road	2,987	0	0
H. Kent, Hither Green	2,961	13	6
J. Appleby and Sons, Southwark Park	2,953	0	0
H. Groves, Greenwich	2,868	0	0
Friday and Ling, Erith	2,831	7	3
Griggs and Son, 71, Manchester Road, Cubitt Town* ..	2,792	0	0

Architect's estimate, £2,814.

* Recommended for acceptance.

Melksham.—For erection of a picture house at Melksham:—

J. T. Roberts	£3,330
Light, Son, and Co., Ltd.	3,129
Drew and Sons	3,111
H. Ash	3,030
Downing and Rudman	3,017
Watts and Co.	2,233
Parsons, Bros.	2,435
E. Linzey and Sons	2,094
Bigwood and Co.,* Melksham ..	1,990

* Accepted.

Northwich.—Accepted for erection of the Northwich baths, for the Urban District Council:—Rice and Sons, London, £9,580.

Silvertown.—For erection of a fire brigade station and firemen's dwellings at Silvertown, for the West Ham Corporation:—

A. and S. Wheeler, Stoke Newington	£3,199
Leslie and Co., Ltd., Kensington Square, W.	7,919
Newman, Ltd., Ilford	7,705
E. Proctor and Sons, Plumstead ..	7,699
W. Payne, Watford	7,499
H. C. Horswill, Forest Gate	7,493
F. and G. Foster, Norwood Junction ..	7,435
F. J. Coxhead, Leytonstone	7,200
S. E. Moss, Southend-on-Sea ..	7,150
J. W. Jerram, East Ham	6,915
A. E. Symes,* Stratford	6,914
O. P. Drever, Kettering	6,820

Borough engineer's estimate, £7,400

* Accepted.

South Chingford.—For the erection of a public elementary school to accommodate 300 infants, for the Essex County Council. Mr. F. Whitmore, County Architect, Chelmsford:—

Allen Bros.	£5,299
Glasscock and Sons	4,642
Robinson, jun.	4,631
Brand, Pettit and Co.	4,619
J. and J. Dean	4,534
W. Payne	4,498
Sharpin	4,345
Foster and Son	4,322
Strand Building Co.	4,237
Clark and Sons	4,196
Davey and Armitage	4,185
Mattock Bros.,* Wood Green	4,117

* Accepted.

Swansea.—Accepted for erection of a new coal exchange in Cambrian Place and Adelaide Street. Mr. Ruthen, Architect:—Billings and Sons, £22,250.

Wimbledon.—For the erection of a private house at Marryat Road, Wimbledon. Mr. A. E. Watson, Architect, The Cottage, Puller Road, High Barnet:—

J. Styles and Son	£2,300
T. Holloway	2,269
J. Carmichael	2,185
J. Burges and Sons	2,136
C. Oldridge and Sons	2,132
Peacock Bros.	2,120
C. P. Kearley	2,100
Pasterfield and English*	2,063

* Accepted.

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ELECTRICAL NOTES.

Conduit Wiring without Condensation.

Under this title the Sun Electrical Company, Ltd., have issued a brochure on the subject of their well-known Kalkos system of conduit wiring. With regard to this system, it is claimed that condensation (due to unequal temperatures between the inside and the outside of the tube) is overcome. The material of which Kalkos is made being an exceptionally good conductor of heat, the temperature inside the tube adapts itself quickly to that of the outside atmosphere, whilst the systems can be made weathertight throughout. Under these circumstances it is considered quite sufficient to use taped wires and not braided wires. In fact, the makers guarantee to renew, free of charge, any wire of C.M.A. grade and manufacture which fails, within three years of its installation, from condensation, provided that the system is carried out in accordance with their standard specification. The system itself comprises drawn brass tubes, trimmed inside and out, socketed together with slip sockets and soldered. All the fittings are trimmed, so that a continuous metallic circuit is provided, providing a reliable earth for two-wire systems, a return for concentric systems, and a neutral conductor for three-wire systems.

Adjustable Telephone Arm.

The Western Electric Company, Ltd., have placed on the market a new fitting of this description, which keeps the standard desk telephone free of the papers and combines lightness with great strength—features which, it is stated, are absent from previous patterns. It is on the principle of the "lazy-tongs" and provides a

simple and compact method of obtaining wide ranges of adjustment. The makers have carried out exhaustive durability tests, which have been perfectly successful, owing to the strong constructive design of the arm. An ingenious arrangement of detachable spring clips for holding the flexible cord obviates the disconnection of the cord from the set, usually necessary to thread it through eyelets, and this makes for special ease in installation. Fixing brackets are furnished which permit of the arm being fitted to a roll-top desk, wall, or flat-top desk. Durability and freedom from sag are guaranteed, and this should appeal strongly to the busy man, who deprecates frequent renewals in the matter of office equipment.

Recent Osram Developments.

One of the points about the Osram lamp is that it is continually necessary for the makers to report progress. A new type is now being manufactured for signs and outdoor advertising purposes. The important requisites of sign lamps are low current consumption and strength, as they are generally run in series. For this purpose low voltage and low wattage Osram lamps have been developed to the same degree of mechanical strength as the high candle-power lamps of the same name. All these smaller lamps are now also manufactured with filaments of drawn tungsten wire wound in one continuous jointless length. A novel sign has recently been erected in Kingsway for the Australian Commonwealth. It is illuminated by 150 Osram lamps, which provide sufficient brilliancy for enabling the daily messages displayed on it to be read at a considerable distance. The light is directed and concentrated by means of hidden reflectors.

The Osram lamp has also achieved another distinction, having been installed

at "Jungfrauoch," the highest railway station in the world (3,475 metres above sea-level), on the Jungfrau Railway. Several trains have also been equipped with these lamps, which are said to withstand well the extreme vibration and jolting to which they are subjected on this railway, and to give results not obtained by other lamps previously installed.

B.T.H. Luminous Radiators.

A series of electric lamp radiators are now being supplied by the British Thomson-Houston Company, artistically and strongly constructed—in addition to their wide range of non-luminous heaters. The framework is of hand-beaten art metal, with, in some cases, the additional embellishment of pottery and metal ornaments. The radiators are supplied completely wired, with lamps, holders and flexible cord at very low inclusive prices. A noteworthy feature of these radiators is the attention to detail which has been lavished on them. The holders fit well and screw up tightly, so that the lamps are absolutely perpendicular, whilst the best grade of flexible cord is supplied and B.T.H. Edison radiator lamps are included. These luminous radiators are described and illustrated in a small folder just issued by the makers, which also contains some advice on the advantages of electric heating in general, and the particular make of radiator in particular. It is particularly gratifying to observe how the makers of electric fittings vie with one another in the production of artistic designs. In this way they are setting up an excellent tradition, the influence of which in many directions cannot fail to be as beneficial as it is extensive. The advancement of electricity has happily happened to synchronise with a remarkable development in taste.

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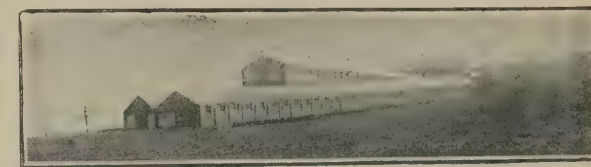
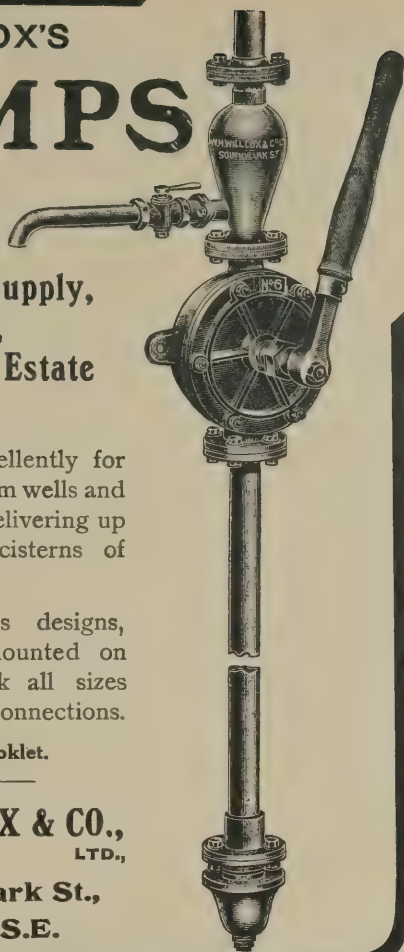
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Factory Builders should lose no time in sending for our Ruberoid Roofing book and a sample of the Roofing, which will be sent free on application to

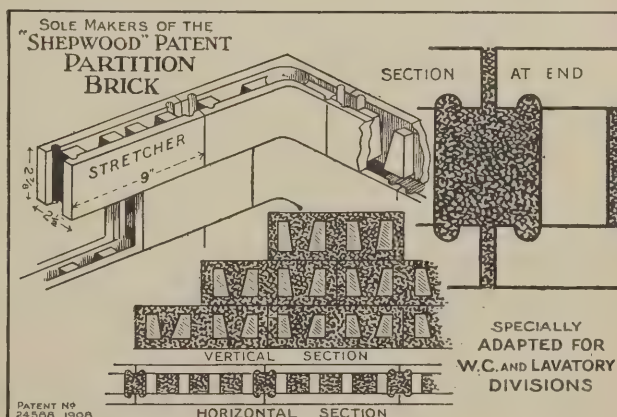
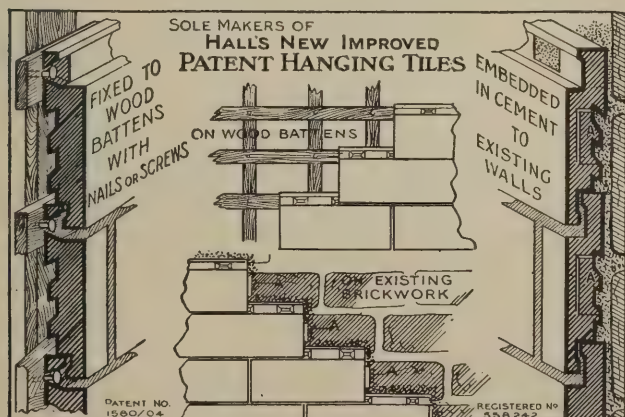
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Osborne Naval College to be Rebuilt; Stead Memorial on the Embankment; Rebuilding of Newport Bridge; Chertsey Lock to be Reconstructed; Superstructure of the London County Hall; Royal Society of Arts' Papers; New Post					

CARRON INTERIOR GRATES ::

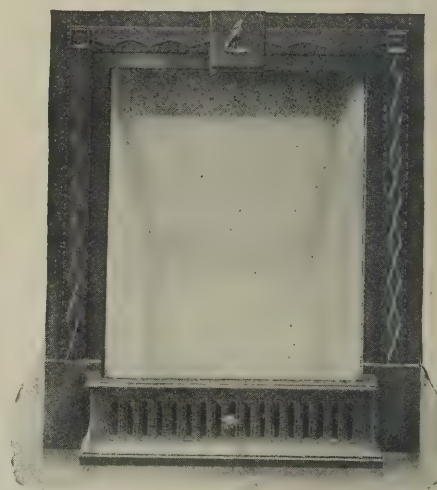
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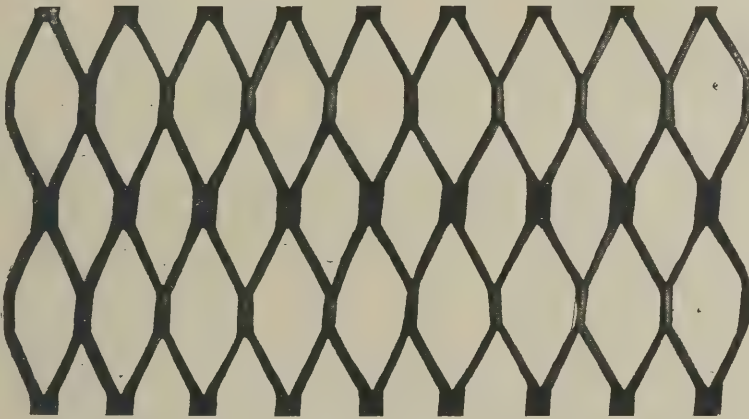
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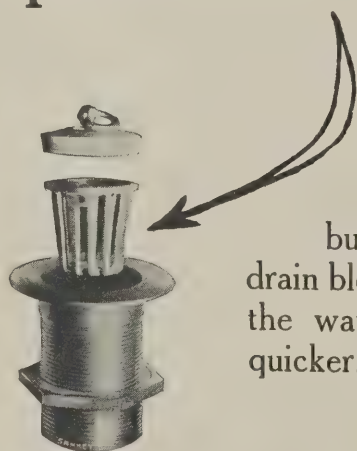
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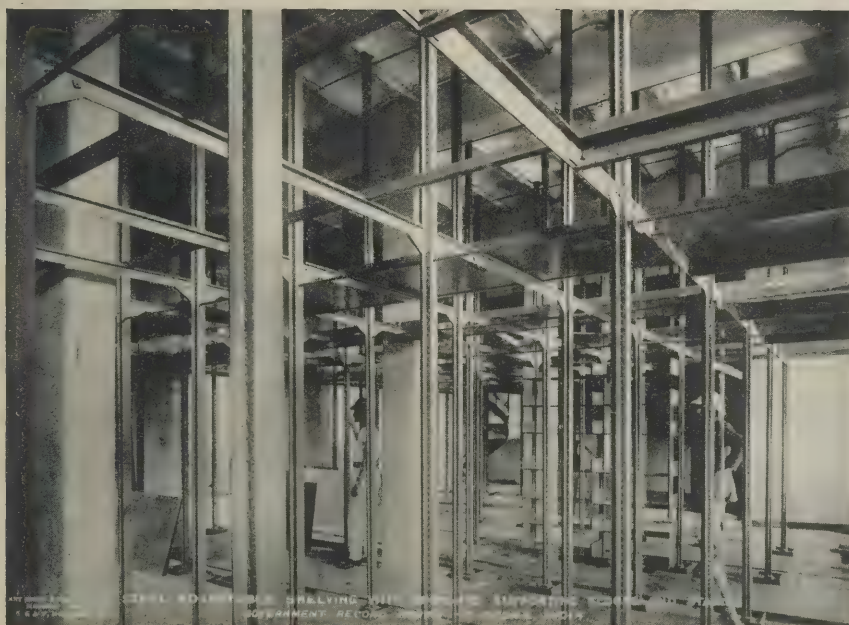
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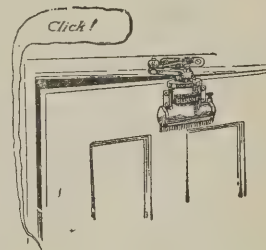
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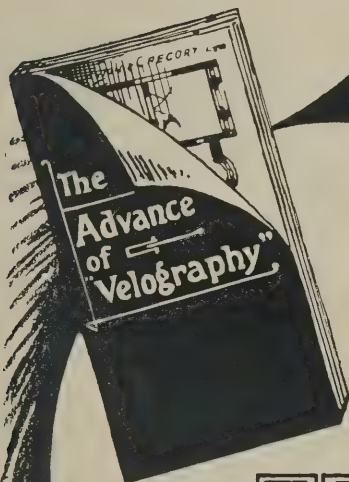


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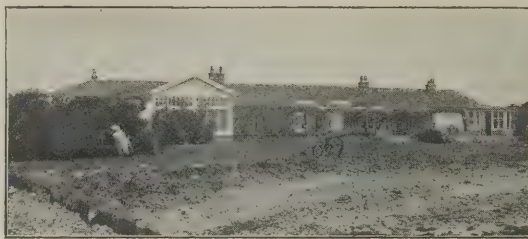
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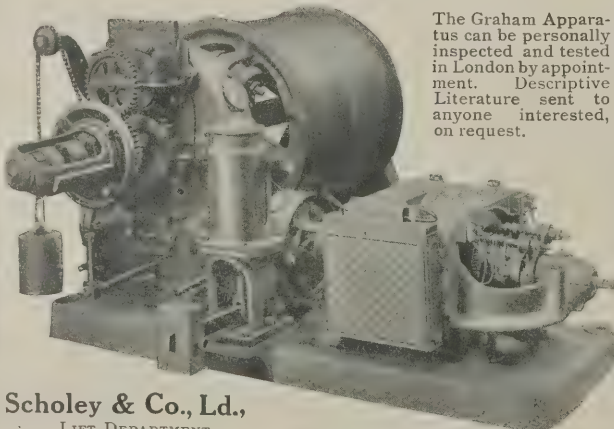
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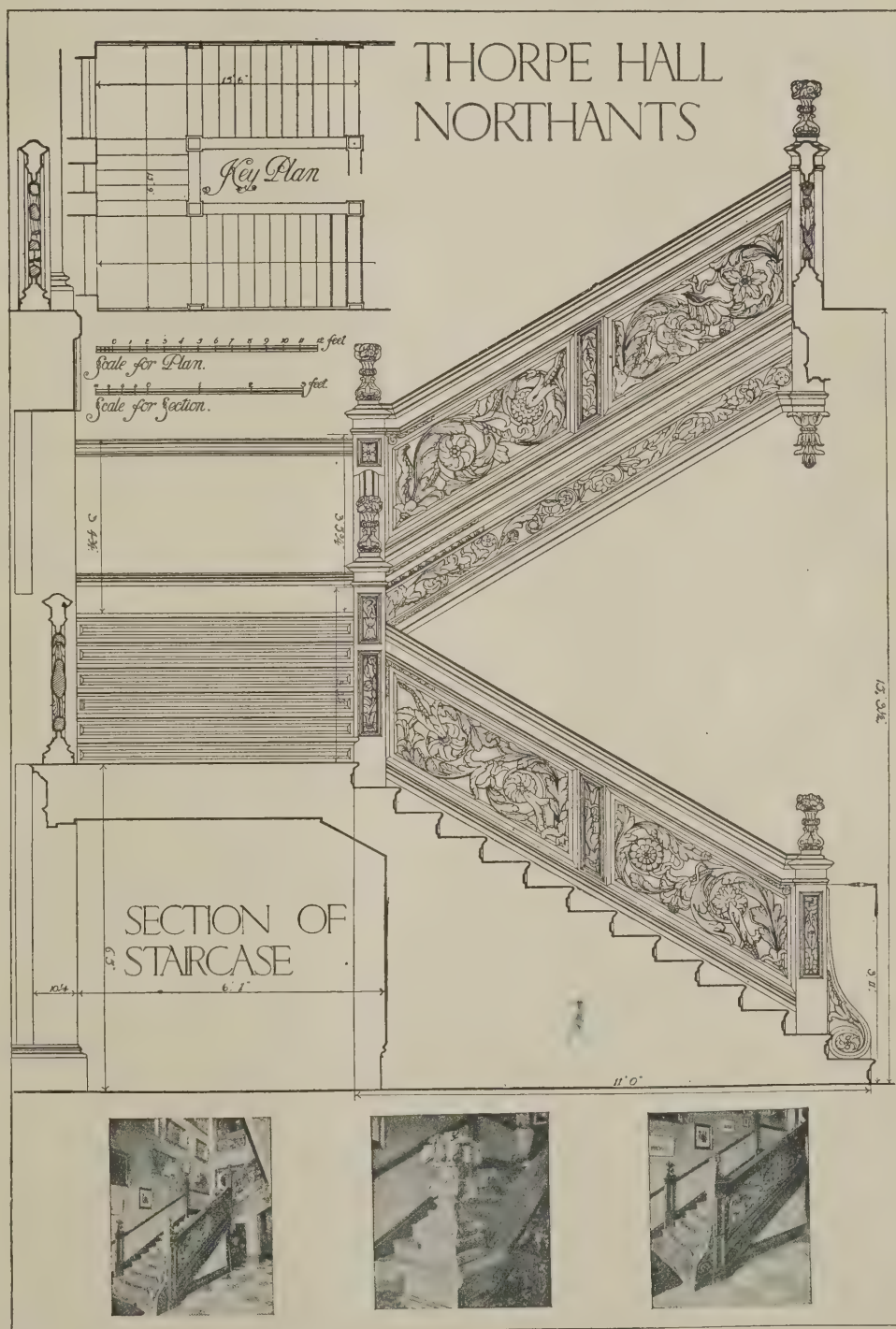
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In this list are included, as a rule, only those contracts for which tenders are returnable about five days or longer after the date of this issue. Unless expressly stated to the contrary, all deposits required for bills of quantities, etc., are returned on receipt of *bona-fide* tenders. The words "Fair Wages Clause" inserted in certain paragraphs signify that persons tendering must conform to a fair wages clause in the Contract, which requires them to pay the rates of wages current in the district.

BUILDING.

December 30.—**PAVILION. West Hartlepool.**—Erection of a bowling green pavilion at the Burn Valley Gardens, for the Corporation, in accordance with the plan, specification, etc., to be seen at the office of Nelson F. Dennis, M.Inst.C.E., Borough Engineer and Surveyor, Borough Engineer's Department. Tenders are to be delivered at the Town Clerk's Office, 78, Church Street.

December 30.—**VILLA. Banff.**—Execution of carpenter, slater, plaster, plumber, painter, and glazier works of villa to be erected on Bellevue Road. Plans and specifications may be seen at 27, Low Street. Tenders to be sent to William Milne, 43, High Street, Banff.

December 30.—**OFFICES. Pontardawe.**—Erection of new offices at the Pontardawe Steel, Tinplate, and Galvanising Works for W. Gilbertson and Co., Ltd., Pontardawe. Plans and specification and quantities may be seen at the offices of J. Cook Rees, M.S.A., Parade Chambers, Neath.

December 30.—**SHELTER, ETC. Altrincham.**—Erection of shelter and conveniences at the Recreation Ground, Broadheath, in accordance with revised plans, for the U.D.C. Plans may be seen and the specification and bill of quantities obtained on application to H. E. Brown, Surveyor, Town Hall, Altrincham. Tenders to be addressed to the Chairman of the Parks Committee. W. S. Stokoe, Clerk to the Council, Town Hall, Altrincham.

December 31.—**SWIMMING BATH, Etc. Southgate.**—Construction of an open-air swimming bath and erection of the necessary buildings and enclosing fences, for the Southgate U.D.C. Plans, specification, and conditions of contract may be seen upon application to the Surveyor, C. G. Lawson, A.M.I.C.E., from whom copies of bills of quantities and forms of tender may be obtained on deposit of £2 in cash. Tenders to be sent to W. M. Ellenor, Clerk, Council Offices, Palmer's Green, N.

December 31-January 2.—**PARAPET. London, E.**—Taking down and building parapet and certain other works at Nos. 31 and 32, Tredegar Square, Mile End, E., for the Guardians of the Poor of the Hamlet of Mile End Old Town, in accordance with the specifications and conditions and form of tender prepared by their Architect, Edmund J. Harrison, of 9, Gray's Inn Square, W.C., copies of which may be obtained not later than December 31, 1912, of the Clerk to the Guardians, Bancroft Road, E., upon depositing £1 is. Tenders must be sent to Benjamin Catmur, Clerk to the Guardians, Guardians' Offices, Bancroft Road, Mile End, E., by January 2. Fair wages clause.

December 31-January 21.—**SCHOOL. London, E.**—Erection of Brampton Road school, to accommodate 1,491 scholars, for the East Ham Education Committee. Each contractor must deposit with his tender a £50 Bank of England note or crossed cheque of equal value. Plans and specifications may be seen, and forms of tender and any other information obtained at the office of the Committee's Architect, R. L. Curtis, 11 and 12, Finsbury Square, London, E.C. Applications for bills of quantities must be made to the Architect not later than December 31, 1912. Tenders must be delivered to F. R. Thompson, Secretary, Education Office, Town Hall, East Ham, E., by January 21.

January 1.—**ALTERATIONS, Etc. Cottingham, Etc. (Yorks.).**—Execution of the following works, for the East Riding of Yorkshire County Council—(a) alterations and additions to the Council school at Cottingham; (b) erection of a Council school for 136 children at Nafferton; (c) erection of a teacher's house at the Hunmanby Council school. Plans and conditions of contract may be inspected and copies of quantities, specifications, and forms of tender obtained on application to the Building Surveyor, County Hall, Beverley. Quantities in respect of the Cottingham and Nafferton schools only can be obtained upon depositing £1 is. For the convenience of persons desirous of tendering, a copy of the plans will also be deposited at each of the above-named schools. Tenders to be delivered at the office of J. Bickersteth, Clerk of the East Riding Education Authority, County Hall, Beverley.

January 1.—**PUMP HOUSE. Phillack.**—Building a pump house of masonry 32 ft. by 27 ft. at Nanspusker, about three miles from Hayle Station, for the U.D.C. Plans, specifications, and forms of tender may be obtained by application to the Clerk to the Council, W. G. Kempthorne, Solicitor, Camborne, and further information will be given by the engineer, Gordon W. Harris, A.M.I.C.E., 1, Holyrood Place, The Hoe, Plymouth.

January 1-11.—**SCHOOL. Iwade (Kent).**—Erection of a new Council school of special construction in steel and concrete to accommodate at 120 scholars at Iwade, for the Kent Education Committee. Plans and specification, prepared by the Committee's Architect, W. H. Robinson, M.S.A., and form of contract may be inspected at the offices of the Committee. Any person desiring to tender and to receive a copy of the bill of quantities must send his name and address, accompanied by a deposit of £1, to Fras. W. Crook, Secretary, Caxton House, Westminster, S.W., by January 1. Tenders to be delivered to E. C. Harris, Esq., 76, High Street, Sittingbourne, Kent.

January 2.—**POLICE STATION. Tring (Herts.).**—Erection of a police station at Tring, for the Hertfordshire County Council Standing Joint Committee. Persons desiring to tender for the work may see the drawings, specification, agreement, etc., at the County Surveyor's Office, Hatfield. A copy of schedule of works (quantities) and a form of tender can be obtained at the County Surveyor's Office upon deposit of £2 2s. Tenders must be delivered to U. A. Smith, County Surveyor. Security required.

January 2.—**ADDITIONS, Etc. Cork.**—Additions and alterations to St. Agnes' Hospital, workhouse, for the Guardians, according to plan and specification, which may be inspected in the Board Room. Forms of tender may be obtained at the Board Room. J. Cotter, Clerk.

January 2.—**ALTERATIONS, ETC. Dorchester.**—Alterations and repairs to the stables at Loud's Mill, for the Town Council. Further particulars and form of tender may be obtained on application to the Borough Surveyor, North Square. Tenders must be delivered to A. G. Symonds, Town Clerk.

January 2.—**BEDROOMS. London, N.W.**—Erection of additional bedrooms for officers over the East Wing of the Front Central Block at their Infirmary, Dartmouth Park Hill, N., for the Guardians of the Poor. The plan and specification may be seen, and bills of quantities and forms of tender obtained from J. E. P. Hall, Clerk to the Guardians, Town Hall, Pancras Road, N.W., on deposit of £5.

January 3.—**ADMINISTRATIVE BLOCK, ETC. Merthyr Tydfil.**—Erection of an administrative block receiving home, boys' home, stable, etc., at Llwydcoed, for the Merthyr Tydfil Board of Guardians. Plans and specifications may be seen at the office of the Architect, Thomas Roderick, Clifton Street, Aberdare, from whom bills of quantities may be obtained. Tenders to be sent to Frank T. James, Clerk to the Guardians, 134, High Street, Merthyr Tydfil.

January 3.—**ADDITIONS. Newry.**—Extension to the existing bridge over the Tidal River and building thereon an addition to the Town Hall, for the U.D.C., in strict accordance with the plans, drawings, and specification, with general conditions annexed, prepared by Charles Blaney, Town Surveyor, and W. A. Scott, A.R.H.A., A.R.I.B.A., Consulting Architect, Dublin. Bills of quantities of the proposed works have been prepared by S. C. Hunter, Building Surveyor, 2, Wellington Place, Belfast. Plans, drawings, and specification can be inspected at the Town Surveyor's Office, and bill of quantities and tender form can be obtained from him or from the Building Surveyor, on deposit of £2 2s. Tenders to be delivered in the Town Clerk's Office, Town Hall, Newry. Surety required.

January 4.—**SCHOOL. Chatham.**—Erection of an elementary school at Ordnance Street, Chatham, for the Education Committee. Drawings, specifications, and conditions of contract may be seen, and the bills of quantities and form of tender obtained at the office of the Architect, George E. Bond, High Street, Rochester. Applications for a copy of the bills of quantities, must be made to the Architect by Jan. 4.

January 6.—**HOSPITAL. Fowey.**—Erection of cottage hospital, Fowey. Plans and specification, together with conditions of contract, may be seen on application to C. W. Parkes Lees, Architect, Porthpaeon House, Lanteglos-by-Fowey, by whom tenders will be received. The sum of £2 2s. must be deposited.

January 10.—**ALTERATIONS, Etc. Worsborough Dale (Yorks.).**—Alterations, etc., to Worsborough Dale Council school, for the West Riding Education Committee (builder, joiner, slater, plumber, plasterer and painter). Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A plan may also be seen at the school. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to the Clerk of the County Council, County Hall, Wakefield.

January 10.—**SCHOOL ENLARGEMENT. South Kirkby (Yorks.).**—Execution of the following works for the West Riding Education Committee: South Kirkby Council School enlargement, builder, joiner, slater, plumber, plasterer, painter. Plans may be seen and specifications with quantities obtained on application to the Education Architect, County Hall, Wakefield. A plan may also be seen at the school. A deposit of £1 in each case must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield. Tenders to be sent to Francis Alvey Darwin, Clerk to the County Council, County Hall, Wakefield.

January 11.—**ALTERATIONS. Lymington.**—Making alterations and additions to the cells and police station at Lymington. Plan, specification, and conditions of contract (no quantities) may be seen at the office of W. J. Taylor, County Surveyor, The Castle, Winchester. A deposit of £1 is. will be required for a copy of the plan, specification, and conditions. Tenders are to be delivered to H. Barber, Clerk to the County Council, The Castle, Winchester.

(Contracts continued on p. xiii.)

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January 11.—**ALTERATIONS, ETC. Totton.**—Making alterations and additions to the cells and police station at Totton. Plan, specification, conditions of contract may be seen and bills of quantities and all necessary information obtained at the office of W. J. Taylor, County Surveyor, The Castle, Winchester. A deposit of £1 is. will be required for a copy of the bills of quantities. Tenders are to be delivered to H. Barber, Clerk to the County Council, The Castle, Winchester.

January 11.—**ALTERATIONS, ETC.—Fordingbridge.**—Making alterations and additions to the cells and police station at Fordingbridge. Plan, specification, and conditions of contract may be seen (no quantities) at the office of W. J. Taylor, County Surveyor, The Castle, Winchester. A deposit of £1 is. will be required for a copy of the plan, specification, and conditions. Tenders to be delivered to H. Barber, Clerk to the County Council, The Castle, Winchester.

January 11.—**SCHOOL BUILDINGS. Hook (Pembrokeshire).**—Erection of new Council school buildings at Hook, in the parish of Llangwm, for the Pembrokeshire Education Authority. Drawings may be seen at the office of the Architect, O. T. Thomas, L.R.I.B.A., County Education Offices, Haverfordwest, and bills of quantities and forms of tender obtained on deposit of £1 is. Tenders must be delivered to H. E. H. James, Clerk to the Education Committee, County Education Offices, Haverfordwest.

January 13.—**HOUSES. Dublin.**—Erection of two houses at Markethill Station, for the Great Northern Railway Company (Ireland). Drawing and specification may be seen at the Engineer's Offices at Dublin and Belfast, and forms of tender may be obtained from T. Morrison, Secretary, Secretary's Office, Amiens Street Terminus, Dublin, on deposit of £1 is.

January 13.—**SHELTERS, Etc. Beckenham.**—Execution of the following for the U.D.C.: (1) Supply and erection at Kelsey Park, Beckenham, of two rustic thatched shelters, about 32 ft. by 16 ft. each; (2) the supply of some 180 rods of rustic fencing, 3 ft. high; and (3) the erection of a greenhouse, 20 ft. by 10 ft. Plans and sections may be seen, and specifications and forms of tender obtained on application to John A. Angell, Surveyor, on deposit of £1. with the Collector. Tenders to be sent to F. Stevens, Clerk to the Council.

ENGINEERING.

December 31.—**ENGINE AND DYNAMO. Hebden Bridge.**—Supply, delivery, and erection of one 240-kw. Diesel engine and dynamo, for the Hebden Bridge U.D.C. Specifications and conditions of contract may be obtained from J. W. Garside, Electrical Engineer to the Council, Electricity Works, Hebden Bridge, on deposit of £1 is. Tenders to be delivered at the offices of S. Ogden, Clerk, Council Offices, Hebden Bridge.

January 3.—**HEATING, Etc. Dublin.**—Hot-water heating and ventilation at the new offices for the Commissioners of Public Works, St. Stephen's Green, Dublin, for the Board of Public Works. Copies of the drawings and specification will be supplied on deposit of £1. H. Williams, Secretary, Office of Public Works, Dublin.

January 4.—**LANDING PLACE ALTERATIONS, Etc. Fowey (Cornwall).**—Minor Alterations and improvements at Whitehouse Landing Place, Fowey, Cornwall. Plans and conditions can be seen either at the Office of the Engineer, H. Bulteel, 31, Whimble Street, Plymouth, or at the Harbour Office, Fowey. Tenders must be sent to W. J. Graham, Clerk to the Fowey Harbour Commissioners, Fowey, Cornwall.

January 8.—**BOREHOLES. Rye.**—Sinking a pair of 18-in. boreholes 60 ft. deep at their Cadborough waterworks, about half a mile from Rye S.E. and C. Railway Station, for the Town Council. Specification and form of tender may be obtained upon application to W. Dawes, Town Clerk, Bank Chambers, Rye, Sussex. Tenders must be delivered at the Town Clerk's Office.

January 8.—**TANK. Buntingford.**—Construction of a precipitation tank at the Buntingford sewage disposal works, for the Buntingford R.D.C. The plans may be seen and form of tender, with specification and other particulars, obtained on application to E.G. Thody, Surveyor. Tenders to be addressed to the Chairman of the Buntingford Rural District Council, Board Room, Buntingford.

January 9.—**DYNAMO, Etc. London, S.W.**—Supply and erection of a steam dynamo, switchboard, and connections at the workhouse, Fulham Palace Road, W., for the Fulham Board of Guardians. Copies of specification and form of tender will be forwarded on application to E. J. Mott, Clerk, 129, Fulham Palace Road, Hammersmith, W., and deposit of £2 2s. Tenders to be delivered to the Clerk.

SANITARY ENGINEERING.

January 1.—**SEWERS, Etc. Harwich.**—Construction of new sewers and incidental works in Victoria Street, Dovercourt, for the Town Council. Copy of specification, bills of quantities, and form of tender may be obtained from F. H. French, Borough Surveyor, Harwich, on deposit of £1 is. The stipulations and conditions of contract, together with the plans, sections, and detail drawings, may be inspected at the Clerk's Office. Tenders to be addressed to A. J. H. Ward, Town Clerk, Harwich.

January 2.—**SEWER. Reading.**—Construction of about three-quarters of a mile of stoneware pipe sewer, together with manholes and other appurtenances, in connection with the Tilehurst drainage, water road sewer, contract No. 1, for the Reading Corporation. Contractors desirous of tendering may obtain copies of the specification, general conditions, and bill of quantities, with form of tender, and inspect the drawings at the offices of the Engineers, J. Taylor Sons and Santo Crimp, Caxton House, Westminster, upon deposit of £2. Tenders must be sent to W. S. Clutterbuck, Town Clerk, Town Hall, Reading. Fair wages clause.

January 2.—**SEWERS. Southwell.**—Laying of about 550 yards of 6-in. stoneware pipe sewers and the construction of small settling tank in the parish of Rolleston, for the Southwell Rural District Council. Plans may be seen and copies of quantities obtained from the Engineers, Sands and Walker, Milton Chambers, Nottingham. Tenders must be sent to J. Ellis, Clerk, Southwell, Notts.

ROADS AND CARTAGE.

January 1.—**WOOD PAVING. Hove (Sussex).**—Providing and laying wood paving (about 3,080 yards superficial) in Hova Villas, for the Town Council. Plans, specification, and form of contract may be seen, and particulars, with forms of tender, obtained at the office of the Borough Surveyor, H. H. Scott. Tenders to be addressed to H. Endacott, Town Clerk, Town Hall, Hove.

January 2.—**PARADE EXTENSION. Ramsgate.**—Extension of Victoria Parade, including sewerage, road, and footpath making, for the Corporation. Plans and specification may be seen, and full particulars obtained on application to T. G. Taylor, Borough Engineer, Borough Engineer and Surveyor's Office, Ramsgate, to whom tenders are to be sent.

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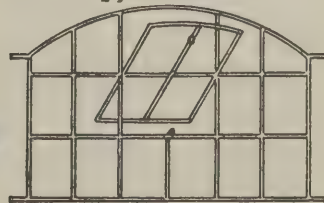
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MISCELLANEOUS.

January 6.—**TAR. Sunbury-on-Thames.**—Supply of about 4,000 gallons of refined coal tar, complying with the Road Board's specification, and delivered as required by the Council at Sunbury-on-Thames. Supply of about 3,500 gallons of ordinary coal tar of good quality, to be delivered as above, for the Sunbury-on-Thames U.D.C. Further particulars may be obtained of H. F. Coates, A.M.I.C.E., Surveyor to the Council. Tenders to be sent to C. E. Goddard, Clerk, Council Offices, Sunbury-on-Thames.

January 7.—**FIREPROOFING. London, S.W.**—Fireproofing the central octagon and wings at the National Gallery, for the Commissioners of H.M. Works and Public Buildings. Drawings, specification, and a copy of the conditions and form of contract may be seen on application to H. A. Collins, H.M. Office of Works, Storey's Gate, London, S.W. Bills of quantities and forms of tender may be obtained from the Secretary, H.M. Office of Works, etc., Storey's Gate, London, S.W., on deposit of £1 is., to whom tenders are to be sent.

Tenders.

Information from accredited sources should be sent to "The Editor," at latest by noon on Saturday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.

Abergavenny.—For erection of the Eisteddfod pavilion, to accommodate 14,000 people, in Bailey Park, Abergavenny, for the Eisteddfod Frenhinol Genedlaethol Cymru, y Fenni, 1913. Mr. B. J. Francis, Architect, Linden House, Abergavenny:—
W. A. Jones, Bridgend £1,796 1s 0
Miles Bros., Rhos, Ruabon... 1,524 3 6
Woodhouse and Co., Nottingham 1,500 0 0
J. Williams, Llanellen, Abergavenny 1,389 0 0
J. G. Thomas and Sons, Abergavenny 1,385 0 0
Davies Bros., Rhos, Ruabon... 1,372 14 0
Foster and Hill,* Abergavenny 1,295 0 0
* Accepted.

Cleethorpes.—For erection of Cleethorpes Council school, for the Lindsey Education Committee. Scorer and Gamble, Architects, Bank Street Chambers, Lincoln:—
W. Kirton, Grimsby £12,741
S. Sherwin and Son, Boston 11,401
Taylor and Richardson, Grimsby 11,352
J. S. Teanby and Sons, Sheffield 10,950
P. T. Kettlewell, Hull 10,497
Wilkinson and Houghton, Grimsby 10,140
Markwell Holmes and Co., Grimsby 10,125
Wm. Ion, Grimsby 10,100
Hewins and Goodhand,* Grimsby 10,075
* Accepted.

Ford (Sunderland).—Accepted for alterations and additions to the isolation hospital at Ford, and for the erection of a tuberculosis pavilion on behalf of the County Health Committee, for the Sunderland Rural District Council:—J. and T. Parker, Sunderland, £7,978.

Hendon.—For erection of central fire station at the Burroughs, Hendon, for the Hendon Urban District Council. Mr. H. A. Welch, Architect, 20, Golder's Green Parade, Golder's Green, Hendon:—
J. Mead £6,835
F. Gough and Co. 6,829
J. Garrett and Son 6,818
H. Lovatt, Ltd. 6,757
A. W. Coles 6,751
F. Webster and Sons 6,681
E. Lawrence and Sons 6,662
McCormick and Sons 6,616
W. Tout 6,575
Sabey and Sons 6,555
Lawrence and Sons 6,550
F. and G. Foster 6,541
Moss and Sons 6,476
A. Faulks 6,397
O. P. Dreyer 6,393
C. H. Hunt and Sons 6,361
W. Gibson and Co. 6,340
H. G. Taylor 6,300
A. Monk 6,280
Strand Building Co. 6,224
C. W. Halls and Co. 6,198
Mattock Bros. 6,157
J. E. Whiter and Co.,* 6,113
* Accepted.

Huntingdon.—For erection of children's quarters, for the Guardians:—
A. Pettit, Godmanchester ... £1,889 0 0
R. Marriott, Rushden 1,862 0 0
Markham and Brattle, Huntingdon 1,849 0 0

F. Giddens, St. Ives 1,772 9 2
Page and Son, Buckden 1,700 0 0
Allen and Son, Brampton 1,696 0 0
Rose and Son, Whittlesey ... 1,665 0 0
W. Wade, St. Neots 1,361 0 0
Thackray and Co., Huntingdon 1,349 15 4

Leavesden (Herts.).—For erection of an iron bridge at Leavesden asylum, for the Metropolitan Asylums Board:—
For work as described in specification prepared by Engineer-in-Chief.
M. T. Shaw and Co., Ltd., Millwall, E. £9,635
General Iron Foundry Co., Ltd., 43, Upper Thames Street, E.C. 6,500
A. De Dawnay and Sons, Ltd., Steelworks Road, Booterstown 6,476
Hayward Bros. and Eckstein, Ltd., 187 to 201, Union Street, Borough, S.E. 5,950
H. Young and Co., Ltd., Nine Elms Ironworks, S.W.* 5,838
For work modified to suit firm's own stock materials.
M. T. Shaw and Co., Ltd. 9,456
Hayward Bros. and Eckstein, Ltd. 5,950
H. Young and Co., Ltd. 5,649
* Recommended for acceptance.

London, S.W.—For alterations and additions to the receiving wards at the workhouse, for the Wandsworth Board of Guardians:—
F. and G. Foster,* Camden Works, Norwood Junction, S.E. £5,973
E. Wall, Summers Town, S.W. 5,985
Strand Building Co., Strand, W.C. 6,260
Davey and Armitage, Southend Moss and Sons, Bedford Row, W.C. 6,277
H. and G. Taylor, Beckenham... 6,430
W. Reason, Rosebery Avenue, E.C. 6,446
Dowsett and Jenkins, Streatham G. Lewin, Croydon 6,730
Johnson and Co., Wandsworth, Common, S.W. 6,789
R. Cook and Sons, Crawley, Sussex 6,955
H. H. Hollingsworth, Peckham, S.E. 7,361
H. Pickrill, Wealdstone, Middlesex 7,395
* Accepted.

(Tenders continued on p. xvi).

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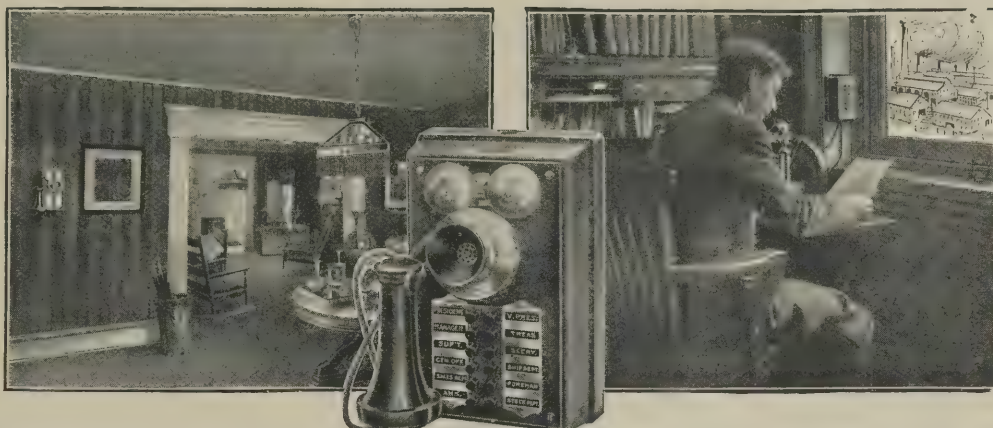
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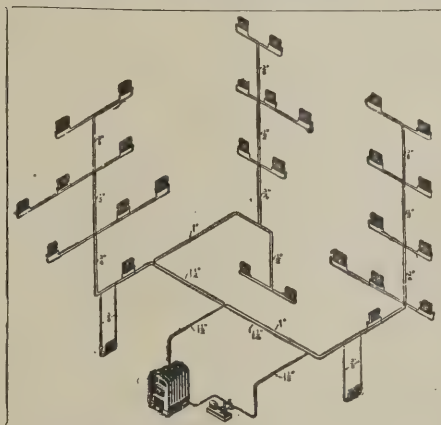
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ASSISTANT (25) desires berth; eight years' experience taking off, variation accounts, re-measuring, etc., working drawings, surveys, etc.; London or provinces.—Box 7471.

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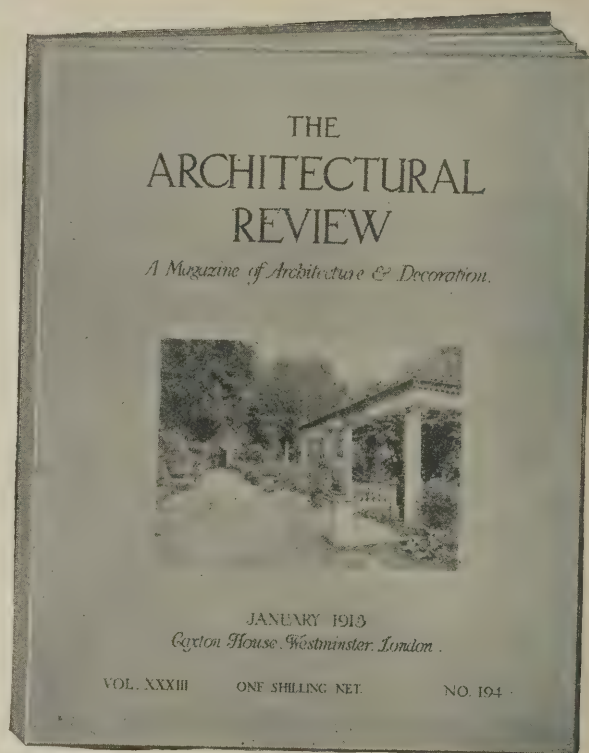
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